The Public Facilities Plan

Adopted By The Chesterfield County Board of Supervisors
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Prepared by the
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EXECUTIVE SUMMARY

The Chesterfield County Public Facilities Plan, an element of the Plan For Chesterfield (the county's comprehensive plan), revises, updates, and replaces the 1995 Public Facilities Plan. The Plan comprehensively assesses existing and future public facility needs. The principal goal of the Plan is to forecast when and where expanded and new public facilities will be needed to most efficiently and conveniently serve county residents. The Plan is a valuable decision making tool that:

- Uses population growth projections to objectively identify the number and general location of public facilities needed through the year 2022.
- Assesses the need for public facilities countywide, in developed and newly developing areas.
- Provides guidance for the Capital Improvements Program (CIP) and cash proffers.
- Provides a link between all county facilities plans and the Comprehensive Plan.
- Identifies opportunities for land acquisition for facilities in advance of construction.

The Plan quantifies the demand for fire/rescue stations, libraries, parks, police stations, and schools through a detailed analysis of current and projected service demands. Level of service goals and service area boundaries were defined in close consultation with county departments and Chesterfield County Public Schools (CCPS). The Plan recommends construction of the following new public facilities by 2022:

- Six new and five expanded fire/rescue stations
- Five new and one expanded elementary schools
- Two new middle schools and one expanded middle school
- Two new high schools (one of which is pending construction) and one expanded high school
- Two new regional parks
- Ten new community parks
- 29 new neighborhood parks
- Nine new special purpose parks
- Four new and four expanded library branches
- One new police district station and three new community policing offices

INTRODUCTION

Purpose and Scope

The purpose of the Plan is to aid in providing county residents with adequate public facilities, at the best locations, when they are needed. The Plan provides facility recommendations based on an objective and equitable assessment of current and future needs throughout all county areas. The Plan is long-term in nature, and fosters planning and programming of capital facilities in support of the Comprehensive Plan development strategy. The Plan is designed to function as a needs assessment for the annual CIP. A comprehensive approach integrates facility needs, siting criteria, and design issues with adopted land use plans and other planning concerns.

The Plan will help guide acquisition of public facility sites through the rezoning and substantial accord review processes, advance purchase, and land purchase options. The Plan does not address funding availability, debt capacity, or other financial concerns. The Plan does not address facility components, equipment, building design, and operational factors, except where such factors directly relate to system-wide facility planning. Facility location recommendations are general in order to promote flexibility for site acquisition, and should not be interpreted as site specific.

Public Facilities Service Areas

The Plan reflects differing levels of review, based on facility characteristics. Facility networks of smaller defined service areas require in-depth review. These facilities include fire and rescue stations, libraries, parks, police facilities and schools. Facilities with countywide service areas typically have separate master plans to examine system-wide needs. As a result, the Plan summarizes and incorporates by reference existing master plans, including:

- Airport Master Plan
- Community Corrections Plan
- Government Center Master Plan
- Parks and Recreation Master Plan
- Thoroughfare Plan
- Water and Wastewater Master Plan
- Water Quality Protection Plan

Plan Timeframe: 2002 – 2022

Plan facility recommendations are generally divided into two categories: facilities needed to meet current demand and/or short-term growth: 2002 to 2007; and facilities needed to meet long-term growth, 2008 to the year 2022. Potential facility locations beyond 2022 are noted.

Relationship to the Comprehensive Plan

As with all components of the Comprehensive Plan, this section is intended to be a guide for decision-makers; therefore, reasonable flexibility is required when fundamental conditions change or analysis based on new data reaches differing conclusions. The Plan provides an important implementing tool for the county's overall development strategy. Comprehensive Plan recommendations encourage sustainable, orderly growth in support of a variety of community goals and objectives. Particularly in a growing suburban jurisdiction, effective facilities planning and programming are critical to the success of a coherent development strategy.

Plan recommendations seek to implement five essential themes outlined in the introduction of the Comprehensive Plan. These themes, known as the “high five,” summarize the major goals of the Comprehensive Plan: *orderly development, quality economic development, shaping aesthetic character, preserving important resources,* and *sustaining neighborhoods.*

The Comprehensive Plan development strategy recommends the appropriate timing and location of future land development. There are three basic geographic approaches to growth and development in the county. *Infill areas* consist of mostly developed areas that still have areas of vacant land.

Planned growth areas consist of more recently developed fringe areas and large amounts of vacant land. *Deferred growth areas* consist of rural areas where development within the 20-year time horizon of the Southern and Western Area Plan (adopted 1993) does not support the extension of many public facilities. The Plan recommends facilities that will maintain desired service levels for infill and planned growth areas.

Population Growth Projections

The following table indicates countywide population projections through the year 2025. These projections formed the basis for estimated service demands discussed in the Plan.

Population Growth in Chesterfield County

Year	Population
1990	211,600
1995	240,100
2000	261,300
2005	290,800
2010	320,800
2015	348,300
2020	376,300
2025	406,700

Source: Chesterfield County Planning Department. 1990-2000 estimates are as of July 1st of each year. Projections for years 2005 through 2025 are for April 1st of each year.

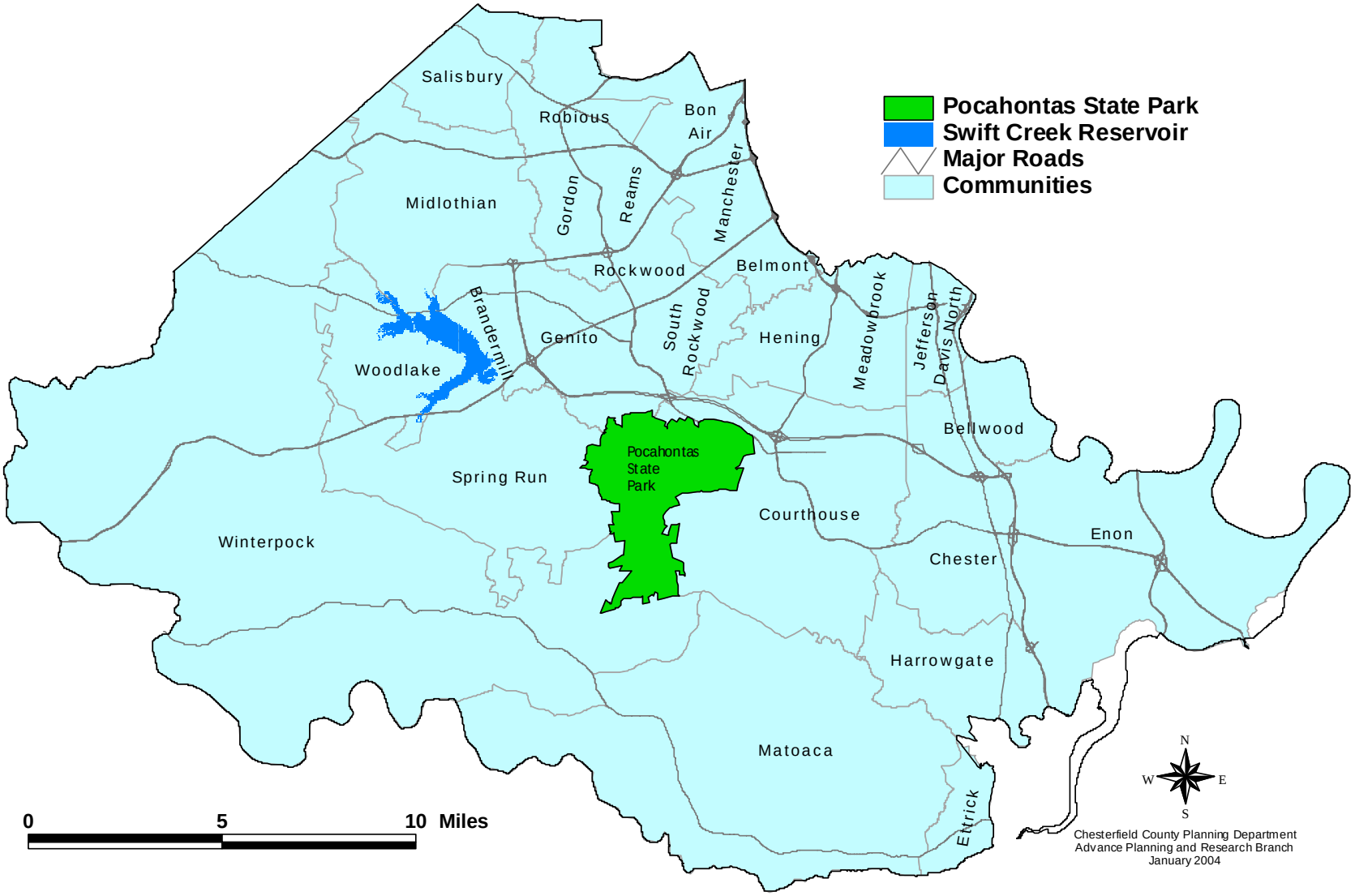
Key Objectives of the Public Facilities Plan

The Plan should serve as the foundation for future decisions concerning the location and expansion of public facilities. Facility decisions should consider the following objectives:

- New facilities should provide convenient service to the greatest number of residents.
- New facilities should adequately and equitably serve all areas of the county, and be located as close as possible to the center of service areas.
- Construct or expand facilities in accord with established level of service objectives.
- Help guide future growth by coordinating the location of public facilities to be consistent with Comprehensive Plan recommendations.
- Use the Plan as a general guide for the county Capital Improvements Program.
- Ensure equitable distribution of public facilities between established and newly developing areas. Consider existing facilities maintenance or replacement needs in established areas to maintain equivalent facility quality in older neighborhoods.
- Priority shall be given to facilities serving existing established communities.
- Mitigate the impact of public facilities on adjacent planned and existing land uses.
- Acquire sites for future public facilities in advance, before there is a need to build.
- Use Plan recommendations, where feasible, to develop multiple use locations and consolidated/co-located facilities.
- Use Plan recommendations to determine whether proposed public facilities are substantially in accord with the Comprehensive Plan, as required by state law.
- Facility recommendations are general, not site specific. Facility recommendation maps identify potential facilities near the transition between Planned Growth and Deferred Growth Areas (as shown in the Introduction to the Plan For Chesterfield, Development Strategy map). These facilities should be located in Planned Growth areas to the extent feasible.

This Plan should be scheduled for review such that the review process can be completed and a new Plan adopted in five years.

Public Facilities Plan: Communities



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FIRE/RESCUE STATIONS

Highlights

- Fire and emergency medical service (EMS) calls are anticipated to increase from over 27,000 calls (2002), to between 39,000 and 48,000 calls by 2022. This would be a 44 to 78 percent increase in calls for service.
- Calls for service should increase the most in older, developed areas.
- Six new fire/rescue stations may be needed by 2022.
- By 2022, five existing fire stations should be expanded.

Introduction

This Plan element is concerned with planning fire/rescue stations, for effective and efficient fire protection and EMS services. This section recommends construction of six new fire/rescue stations and expansion of five existing fire stations by 2022.

Existing Facilities

There are currently 18 fire/rescue stations and eight volunteer rescue stations in the county. In 2002, these stations responded to approximately 27,000 calls for service. Twelve fire/rescue stations have fire apparatus and 24-hour or daytime ambulances, while six stations do not have ambulances. All stations provide first response basic and/or advanced life support EMS services. Fire/EMS and the volunteer rescue squad agencies provide seamless, integrated emergency medical service without respect to individual station and agency affiliation or district boundaries. Fire/EMS effectiveness is greatly influenced by staffing, organization, and equipment.

Level of Service

The primary level of service indicator for fire and EMS is *response time*. The Fire/EMS level of service standard is: *respond to 90 percent of all Priority 1 Fire/EMS emergencies in the urban corridor within six (6) minutes.* The urban corridor is determined by the Fire/EMS Department, and includes most developed areas in the county. Areas outside of the urban corridor are typically rural areas requiring greater driving distance for emergency response. The six-minute service standard includes one minute for 911 call processing and dispatch, one minute for first responder vehicle rollout, and four minutes driving time. Most (87 percent) emergency service calls originate inside the urban corridor. Only 43 percent of Priority 1 urban corridor Fire and EMS calls in 2002 achieved the six-minute response standard.

Findings

Existing System Conditions: The following table summarizes key Fire/EMS indicators from 1992 to 2002.

Fire/EMS Service Indicators

	1992	1995	2000	2002	1992-2002 Change
Population (July 1)	224,250	240,100	261,300	274,500	22%
Fire Calls	9,257	11,235	14,771	14,975	62%
EMS Calls (by firefighters)	4,214	6,118	11,108	12,358	193%
Total Calls	13,471	17,353	25,879	27,333	103%
Total Calls Per Capita	.060	.072	.099	.099	65%
Call Response Time (minutes)					
Fire	n/a	n/a	8.0	7.9	n/a
EMS	n/a	7.6	8.2	8.0	n/a
All Calls	n/a	6.3	8.2	8.1	n/a
Priority 1 Urban Corridor Calls	n/a	n/a	6.8	6.6	n/a
Response Within 6 minutes – EMS only	52.9%	47.9%	44.3%	46.9%	(11.3%)
Fire/Rescue Stations	15	15	17	18	3
Calls Per Station	898	1,157	1,522	1,518	620

Fire/EMS calls are increasing faster than new facilities and emergency service resources. In addition, fire and rescue response times have increased over the past decade. In 1995, the average response time for all Fire/EMS calls countywide was 6.3 minutes. By 2002, the average response times for all calls had increased to 8.1 minutes.

Underserved Areas in the Urban Corridor
(Located Beyond Existing Fire/Rescue Station Driving Distance)

Generalized Service Area	2002 Priority 1 Calls
South Courthouse	654
South Jefferson Davis	383
Centralia/Salem Church	232
Lucks Lane/Smoketree*	170
North Bon Air	166
North Salisbury	81
North Woodlake	57

** Excludes service coverage provided by the new Courthouse Road station.*

2002 Fire/EMS Call Activity in Service Area of Possible Stations

Service Area	Optimum Station Location	Total Fire/EMS Calls	Average Response Time	Priority 1 Urban Area Calls	Average Response Time
Centralia/Salem Church	Ironbridge/Centralia	2,116	8.39	1,152	7.12
South Courthouse	Courthouse/Rt. 288	2,031	8.01	1,135	7.17
North Bon Air	Buford/Bon View	1,865	7.13	1,041	6.16
South Jefferson Davis	Jeff Davis/Harrowgate	1,003	9.73	519	8.27
North Salisbury	Robious/Twin Team	732	7.17	387	5.14
South Courthouse	Newbys Bridge/Valencia	556	9.16	321	8.01
Lucks Lane/Smoketree	Lucks Lane/Walton Bluff	432	9.80	226	8.23
North Woodlake	Woolridge/Foxlight	234	10.11	94	7.94

Priority 1 Urban Area Calls overlap service areas of existing stations, and therefore exceed the number of calls indicated in Table 2.

Locational Criteria

- Fire and EMS facilities should be co-located or coordinated for maximum efficiency.
- Stations should be located with quick access to a major arterial and, if possible, located near two major arterial roads offering both east-west and north-south travel.

Other Criteria

- New fire/rescue station sites should be at least five acres, to accommodate future expansion.
- Include a community meeting room for 50-100 persons in the design of new fire/rescue stations unless there is a similar facility available for the surrounding community.
- Mitigate impacts on nearby residential areas

Recommendations

The following recommendations should meet existing and future service demands. Priority should be given to stations in areas where the greatest number of urban corridor residents are currently served by response times exceeding six minutes. These recommendations promote Comprehensive Plan goals for sustaining neighborhoods by focusing most new facilities within existing developed areas. In summary, six to eleven new or expanded fire/rescue stations will be needed by the year 2022. These recommendations assume: 1) completion of the pending Rivers Bend and Courthouse Road fire/rescue stations; 2) that each existing and future station can serve an average of 1,500 Fire/EMS calls per year (*equivalent to the average call loading per station in 2002*); and 3) that system-wide response times will improved as new facilities construction/expansion leads to smaller response areas.

The following table outlines the minimum number of new and/or expanded fire and rescue stations needed in five-year increments, based on existing per capita call rates. This table provides two facility scenarios, one based on stable per capita call rates, and one based on per capita call growth exceeding

population growth rates. The first five stations would fill significant existing gaps in the existing urban corridor network. The sixth station would improve overall service in proximity to major road networks.

Minimum Number of New or Improved Fire/Rescue Facilities Needed
Timing of need is based on countywide Fire/EMS calls per capita

New or Expanded Fire and Rescue Stations Needed	At .09975 Countywide Fire/EMS Calls Per Capita	At .105 Countywide Fire/EMS Calls Per Capita	At .111 Countywide Fire/EMS Calls Per Capita	At .116 Countywide Fire/EMS Calls Per Capita	At .122 Countywide Fire/EMS Calls Per Capita
By 2007	0	1	2	3	5
By 2012	2	3	4	6	7
By 2017	4	5	6	8	9
By 2022	6	7	9	10	11

2002-2022

Construct new fire/rescue stations to serve existing service gaps.

a. **Ironbridge/Centralia:** (*vicinity of Ironbridge Road and Centralia Road*).
b. **Courthouse/Route 288:** (*vicinity of Courthouse Road and Route 288*).
c. **Harrowgate:** (*vicinity of Harrowgate Road and Route 301*).
d. **North Woodlake:** (*vicinity of Woolridge Road and Foxlight Parkway*).
e. **Newbys Bridge/Valencia:** (*vicinity of Newbys Bridge Road and Valencia Road*). This station would be warranted when service area reaches 1,000 fire/EMS calls per year.

Construct new fire/rescue station to serve growth areas and expanded road network.

f. **West Salisbury:** (*vicinity of Route 288 and Route 60*).

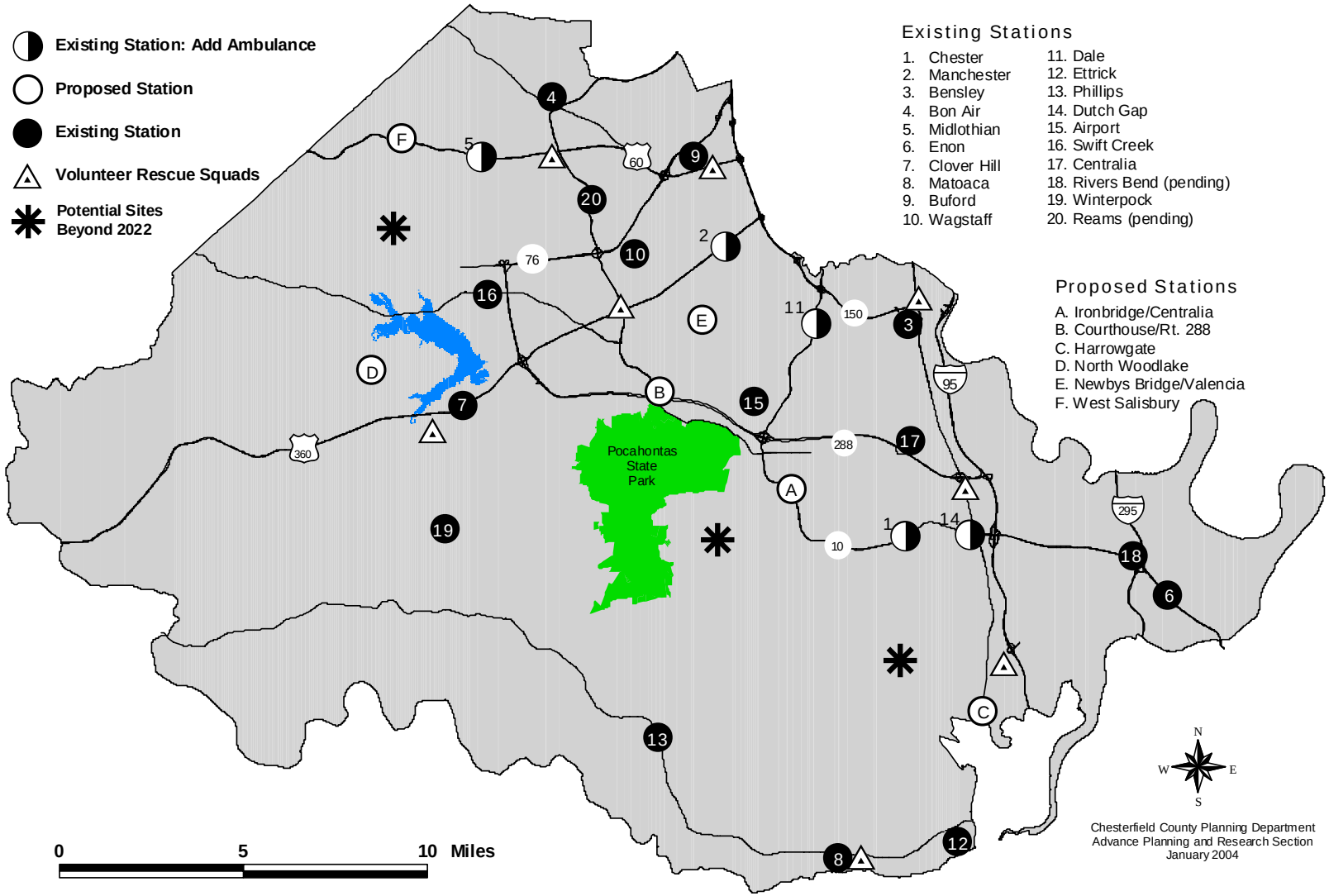
Improve fire/rescue stations to serve existing service gaps.

g. **Manchester Fire Station:** Add full-time ambulance service to Manchester Fire Station.
h. **Dale Fire Station:** Add full-time first response vehicle (FRV) to Dale Fire Station.
i. **Midlothian Fire Station:** Add full-time ambulance service to Midlothian Fire Station. If the existing station cannot be expanded to add ambulance service, replace station in the same vicinity (between Old Buckingham Road and Charter Colony Parkway).
j. **Dutch Gap Fire Station:** Add full-time ambulance service to Dutch Gap Fire Station.
k. **Chester Fire Station:** Add full-time ambulance service to Chester Fire Station.

Post 2022: *Construct new fire stations to serve growth areas.*

l. **Otterdale/Old Hundred:** (vicinity of Otterdale and Old Hundred Roads).
m. **Nash Road:** (vicinity of Nash Road, between Woodpecker and Beach Roads).
n. **Branders Bridge:** (vicinity of Branders Bridge Road, between Bradley Bridge and Whitehouse Roads).

Public Facilities Plan: Fire/EMS Recommendations



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LIBRARIES

Highlights

- There is an existing shortfall of approximately 29,000 square feet of library space.
- By the year 2022, this shortfall will increase to approximately 99,000 square feet.
- To serve existing developed areas and new population growth by the year 2022, four new libraries will be needed, and four existing libraries should be expanded.

Introduction

The library system brings people and information together by providing educational, cultural and recreational resources and opportunities for the purposes of self-enrichment and life-long learning. The county's highly educated and growing population continues to increase demands for quality library facilities and services.

Existing Facilities

There are currently nine county libraries, providing 133,800 square feet of library space. Libraries range in size from 4,100 square feet (Enon), to 29,700 (Central). The average branch size is approximately 15,000 square feet.

Level of Service

For the purposes of this analysis, the Library has identified two level of service standards: *library floor space* (providing .6 square feet of library space per capita), and *patron drive time* (providing libraries within approximately ten minute driving distance to patrons). The .6 square feet per capita and customer drive time standards help identify underserved populations. These two service indicators also allow comparison of current service levels with the 1995 Plan, since these indicators were also used in the 1995 Plan.

Findings

The following findings are based on analysis of existing library service areas, drive times, and providing .6 square feet of library space per capita. *(Projected library space needs are rounded to the nearest hundred square feet).*

- Expansion and new construction of library facilities since 1995 has allowed the Library to maintain the 1995 level of .5 square feet of library space per capita. However this is still below the standard of .6 square feet of library space per capita. Without future expansions and/or new construction, the library system will continue to fall behind.
- There is currently demand for an additional 28,800 square feet of library space countywide. If facilities are not expanded or added, this demand is projected to grow to 99,300 square feet by 2022.
- 17,700 square feet of the current unmet demand is located north of Hull Street Road. This unmet demand is expected to grow to 42,300 square feet by 2022.
- 11,100 square feet of the current unmet demand is located south of Hull Street Road. This unmet demand is expected to grow to 57,000 square feet by 2022.
- There is currently substantial unmet demand within the Bon Air, Clover Hill, Meadowdale, and Midlothian service areas.
- Several existing branches may not be feasibly expanded, due to site, building, and neighborhood constraints. These branches include Bon Air, Clover Hill, and Midlothian. The library system has adopted a strategy of providing additional libraries to relieve excess demand in communities where existing facilities cannot be feasibly expanded.

Locational Criteria

The goal of the library system is to provide county residents convenient access to high quality library services, subject to certain criteria:

- Library construction should be planned to respond to both current unmet demand and to meet projected future demand.

- Library locations should be central to service areas, providing drive times of ten minutes or less to most parts of a service area. Drive times may be longer for rural areas.
- Libraries should be located with convenient, direct access to a major arterial road. Preferred locations will have access to both north/south and east/west running major arterial roads.
- New library sites should allow for future facility expansion.
- Library sites should be incorporated into village and mixed use centers, and integrated with community retail and/or other public facilities where possible. Reduced site area and shared parking facilities may be appropriate where feasible.
- Due to site, building, and neighborhood limitations at some locations, it may be more feasible to construct additional branches to meet Library service standards rather than to expand existing facilities.

Recommendations

The following facility recommendations will further Comprehensive Plan goals of promoting orderly development by providing new facilities to serve planned growth areas. These recommendations also promote Comprehensive Plan goals of sustaining neighborhoods by encouraging library branch expansion and new branch development in established, developed parts of the county. Recommended library sizes are approximate, and locations are generalized.

2002-2007

a. **Reams/Gordon:** Construct a new 20,000 square foot branch in vicinity of Courthouse Road, Lucks Lane, and Reams Road.
b. **Beach Road:** Construct a new 20,000 square foot branch in the vicinity of Beach and Winterpock Roads.
c. **Meadowdale:** Expand existing branch by 8,600 square feet (*which will increase the facility to 20,000 square feet*).
d. **Level of Service Standards:** The Library should review and revise level of service standards, as necessary, to address changing library facility usage, customer, and community needs.

2007 - 2012

e. **Robious/Huguenot:** Construct a new 15,000 to 20,000 square foot branch in the Robious Road corridor from Huguenot Road to James River Road.
f. **Enon:** Expand existing branch by 10,900 square feet (*which will increase the facility to 15,000 square feet*).

2012 - 2017

g. **Ettrick/Matoaca:** Expand or replace the existing 8,000 square foot branch, to provide for a 15,000 square foot branch. This project should be based on a detailed site study and locational analysis to examine branch utilization and the location of existing and future customers. If the branch is replaced, the new branch should be located to conveniently serve the existing Ettrick/Matoaca service area.

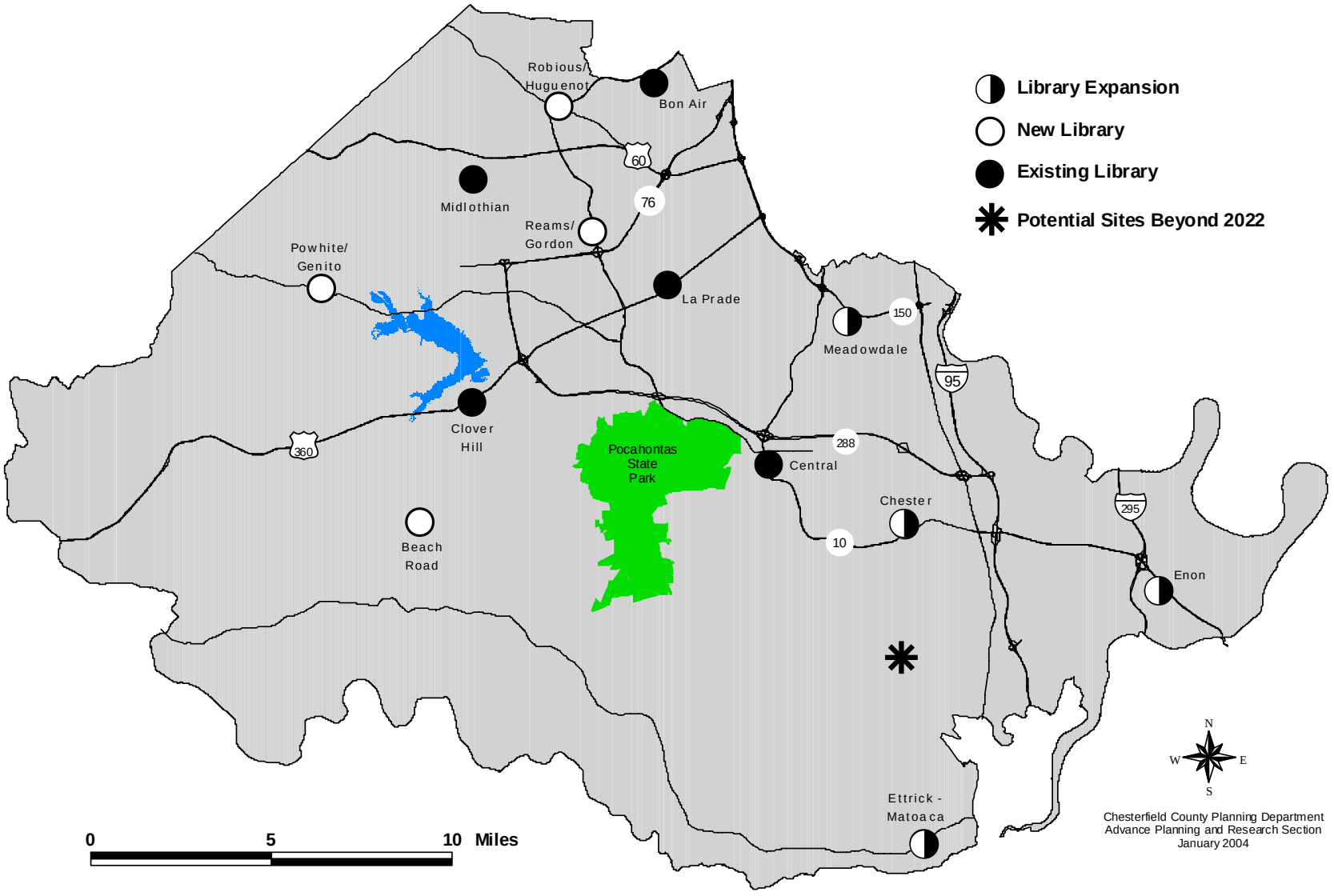
2017 - 2022

h. **Powhite/Genito:** Construct a new 10,000 square foot branch in the vicinity of Genito Road and the future Powhite Parkway extension.
i. **Chester:** Expand existing branch by 4,500 square feet (*which will increase the facility to 20,000 square feet*).

Post 2022

j. **Regional Mixed Use Center:** Construct a new branch 10,000 to 15,000 square foot branch in the vicinity of the regional mixed-use center identified on the Southern and Western Area Land Use Plan.

Public Facilities Plan: Library Recommendations



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PARKS AND RECREATION

Highlights

- In 2003, there were over 3,600 acres of parks and facilities in Chesterfield County – more than double the 1994 acreage.
- The largest current deficiency of park acreage is in neighborhood parks. 253 acres of neighborhood parkland (29 new parks) will be needed by 2020.
- 180 acres of community parkland (equivalent to seven new parks) will be needed by 2020.
- 354 acres of regional parkland (equivalent to three new parks) will be needed by 2020.
- Renovation and upgrades of aging facilities will be increasingly needed.
- Development or expansion of 3 large and 5 small gymnasiums will be needed by 2020.
- Increased system diversity is needed, beyond traditional parks and recreation facilities.

Introduction

This section of the Plan relies on the time frame, analysis and recommendations included in the recently adopted Parks and Recreation Master Plan. Master Plan recommendations extend to the year 2020. Generally, community athletic needs are being well served. Until recently, the county has focused primarily on acquiring and developing parks, improving active recreation, and developing passive (non-athletic) areas. Because much of the park system is over 25 years old, the major issue with active (athletic) recreation at this time is renovating aging facilities. While there is a high level of satisfaction with county parks and recreation programs and facilities, community feedback has revealed an interest in a broadened focus and greater diversity of facilities and programs. The trends evidenced in these changes are supported by the findings of the Master Plan. The demand for facilities such as greenways, trails, special purpose parks associated with historic resources, open space, and conservation areas is expected to continue to increase.

Existing Facilities and Resources

County Parks: The parks and recreation system has grown considerably over the past decade, from 1,657 acres in 1994 to 3,777 acres in 2003. Most recent growth has been in special purpose/conservation parks.

Existing Parks	**1994 (acres)**	**2003 (acres)**
Community Parks/Athletic Complexes	383	490
Neighborhood Parks	316	284
Regional Parks	774	1,145
Special Purpose/Conservation Parks	184	1,858
Total	**1,657**	**3,777**

Acreage declined at neighborhood parks due to a reclassification based on acreage. Parks listed above include limited access facilities at schools. Total acreage includes 85 acres of parkland leased by the county.

Level of Service

The overall goal in identifying sites for acquisition of new parkland is to meet level of service standards in advance of population growth. The Master Plan included a level of service analysis. This analysis considered park service-radius coverage by census tracts to determine existing park deficiencies. The following standards were used:

Park Type	Size Range (acres)	Locational Criteria	Service Area (radius)	Population Service Standard
Neighborhood	5 – 20	*Parks:* n/a *Athletic Facilities:* same as elementary and middle schools	1 – 1.5 miles	1.5 acres / 1,000 persons
Community	20 – 99	*Parks:* easily accessible to major roadway systems in the service area *Athletic Facilities:* Co-located with middle and high schools where possible	2 – 4 miles	2 acres / 1,000 persons
Regional	100 - 500	Easily accessible land connected to major countywide roadway system	3 – 5 miles	4.5 acres / 1,000 persons

Findings

The Master Plan analysis utilized customized standards to match specific needs in Chesterfield County for future facilities. The Master Plan needs assessment includes renovation of existing facilities and new/expanded facility needs.

Renovation of Existing Parks and Facilities: As facilities increase and age, park replacement and renovation shortfalls will increase. If the county is to maintain the current quality of service and keep up with the growing demand for new facilities, annual funding will need to be appropriated for timely renovation and replacement of facilities.

Community Centers and Indoor Athletic Facility Needs: There are increasing demands for indoor athletic facilities as well as non-athletic programming. School facility use is only a partial solution due to lack of availability of the schools during the weekdays. Community centers are proposed to meet a range of indoor space needs. Five facilities (20,000 square feet each) would supplement indoor space needs at the neighborhood level. These facilities generally would provide meeting rooms and a gymnasium. Three larger facilities (30,000 square feet each) would also provide space for an auxiliary gym or auditorium. Level of service analysis followed service-radius coverage area as used for the new regional parkland standard with a service radius of 3-5 miles. Co-location of Community Centers on existing or proposed park sites or county-owned land was the primary criteria within service radius guidelines. Co-location could also include other public service agencies or community based program entities. The 3-mile service radius was used for more densely populated areas and the 5-mile service radius was used for the more rural areas. Demand analysis was based on the Virginia Outdoors Plan standard of 0.75 square feet per person population or 1.33 people per square foot.

Trails*:* Shortfalls have been identified in all types of public use trails. Trail development on park sites will not address all identified trail shortfalls. The county will pursue other opportunities for recreational trail development, including use of abandoned railroad right-of-ways, utility right-of-ways, and floodplain trail development along rivers, creeks and their major tributaries. The county will continue to work through the zoning process to acquire land or easements needed to provide trail connections.

Water Access: Shortfalls have been identified in all types of facilities and activities for water access and viewing: boat ramps, canoe launches and providing river and stream access. These demands will be met by implementing existing master plans for park sites on the James and Appomattox Rivers, and Lake Chesdin, through targeted new access. Stream use and access should be concentrated on Swift and Falling Creeks and their tributaries.

Neighborhood Parks: The largest deficiency is in neighborhood park facilities. The county is 199 acres short of the neighborhood park level of service standard. By 2020, this shortfall will grow to 253 acres. The Master Plan recommends 29 new neighborhood parks by 2020. Neighborhood park development will be addressed by acquisition of parkland, and acquisition and development of neighborhood athletic parks (associated with schools or special purpose park sites). The county will partner with local civic groups and developers to construct and maintain neighborhood parks. Targeting development of trails, picnic shelters and playground facilities at these sites will address shortfalls in these types of facilities. Neighborhood parks may incorporate historic resources.

***Community Parks**:* Although community parkland is currently adequate to meet level of service standards, there are still many underserved areas. During the next 20 years, this deficiency will grow to 252 acres overall. Seven new parks, at average size of 36 acres each, will be needed by 2020.

Regional Parks: Regional parkland is currently adequate to meet level of service standards. Three new regional parks, with a combined land area of 354 acres will be needed by 2020. In areas of the county where large tracts of land may not be available for purchase or are cost-prohibitive (such as the northern Midlothian area), substituting multiple community parks for a regional park may be the only practical solution.

***Special Purpose Parks**:* The Master Plan identifies the need for ten new or expanded special purpose parks along the James and Appomattox Rivers during the next 20 years. Special purpose parks preserve and interpret unique recreational, cultural or environmental resources and new parks may be added to proposed sites if determined to be of significant value through future studies.

Locational Criteria

- Neighborhood parks should serve several neighborhoods, and be five to 20 acres.
- Neighborhood athletic facilities should serve the same site and service areas of elementary or middle schools where possible.
- Community parks should be located on relatively level, primarily green open space easily accessible to major roadway systems serving the park service area. These facilities should be 20 to 99 acres.
- Community athletic facilities should be co-located with middle or high schools, where possible.
- Regional parks should be located on large, unfragmented tracts of relatively level, green, open space, easily accessible land that is connected to major countywide road systems. These facilities should be 100 to 500 acres.
- Special purpose parks should be located on sites with historical, ecological, or cultural significance.

Other Criteria

- Park development should be consistent with Master Plan design criteria.

Recommendations

The following recommendations will further Comprehensive Plan goals for sustaining existing neighborhoods, by emphasizing new park and recreation facility development in areas with comparatively few facilities. In addition, these recommendations will promote orderly development by encouraging new facilities to serve planned growth areas.

Plan Development

- Demand for linear trails, greenways, and blueways necessitates the development of a plan for a linear parks system along with specific strategies for creating the system. This process should be coordinated with other long-range plans and adjacent jurisdictions.
- Perform cultural landscape/historic resources study to determine resources to preserve, enhance, and develop as public parks. Develop a plan for the preservation and compatible use of the historic and cultural resources. Plans need to be developed that include strategies for protecting critical resources and view sheds, with the support of private groups, individuals, and state and federal agencies.

Land Acquisition

- Continue to accept dedications of property through the zoning process, working with the public school system, and direct land purchases to meet the need for more parks.
- Neighborhood parkland acquisition and development should be a cooperative effort with civic groups and developers. Acreage may need to be split among smaller parks in high-density areas.
- Increase acreage in linear parks and open space (priorities to be developed based on the pending Greenways/Linear Park Plan).
- The linear park and open space systems should include riparian areas along the James and Appomattox Rivers, Swift and Falling Creeks, and their major tributaries.

- Increase park acreage around historic properties (priorities to be determined by the pending Cultural Landscape/Historic Resources Plan).

Sports Facility Development

- Build/upgrade 13 baseball/softball fields, 12 football fields, and 18 soccer fields by 2010.
- Add 12 gyms by 2010, through school upgrades, rental, adaptive re-use, increased school access, and new construction of community center and school sites.
- Develop partnerships with the private sector for sports facility development.

General Recreation

- Improve and expand trail systems within existing parks, and acquire new trail lands to significantly increase trails for a variety of users by 2010.
- Add / upgrade play courts (36 tennis and 6 volleyball) at existing parks and include in development plans for new parks, to serve growth areas by 2010. Part of play court demand will be met by the private sector and through development of school sites.
- Support private-sector initiatives for a tournament-quality sports facility/indoor arena.
- Expand Rockwood Nature Center and construct two new environmental/nature centers at conservation areas (one at Dutch Gap, and one at Horner Park).
- Construct five skating facilities throughout the county in partnership with user groups and other partners.
- Construct 19 picnic shelters and 40 playgrounds throughout the county at existing parks and school sites, and as part of new park development.

Community Centers

- Expand community center system for countywide access, and enlarge typical building plans to include indoor gym(s) and large multi-use space.
- Develop three large community centers (two new; one expanded), and five small community centers (four new; one expanded).

Timing of Facility Development

2000-2005

a.	(Community Park)	Spring Run Athletic Complex
b.	(Special Purpose Park)	Robious Landing Expansion (*acquired, pending development*)
c.	(Special Purpose Park)	Lake Chesdin Park
d.	(Special Purpose Park)	Virginia State University Riverside Trail
e.	(Special Purpose Park)	Falling Creek Expansion (*acquisition pending*)

2000-2010

f.	(Neighborhood Parks)	3 Parks, Midlothian area, north of Route 60
g.	(Neighborhood Parks)	5 Parks, eastern Route 60 / Route 360 interior corridor
h.	(Neighborhood Parks)	3 Parks, eastern Route 360 / Route 10 interior corridor
i.	(Neighborhood Parks)	6 Parks, Route 10 / Route 301 interior corridor
j.	(Neighborhood Park)	River Road
k.	(Neighborhood Parks)	3 Parks, Ettrick area

2005-2010

l.	(Regional Park)	Winterpock
m.	(Community Park)	Green Springs
n.	(Community Park)	Belmont/Hening/Meadowbrook (formerly Northern Area)
o.	(Community Park)	Magnolia Green
p.	(Community Park)	Pocahontas (formerly Central Area)
q.	(Special Purpose Park)	Bermuda Hundred *(acquired, pending development)*
r.	(Special Purpose Park)	Appomattox Park
s.	(Special Purpose Park)	Western Lake Chesdin Boat Launch
t.	(Special Purpose Park)	Rt. 360 & Appomattox Canoe Launch
u.	(Special Purpose Park)	River Rd. & Appomattox Canoe Launch
v.	(Recreation Center)	Government Complex Area (30,000 sq. ft. facility)

w.	(Recreation Center)	Winterpock (20,000 sq. ft. facility)
x.	(Recreation Center)	Rockwood Park (20,000 sq. ft. facility)

2010-2015

y.	(Regional Park)	Northern Midlothian (substituted with three community parks)
z.	(Recreation Center)	Northern Midlothian (30,000 sq. ft. facility)
aa.	(Recreation Center)	Pocahontas (20,000 sq. ft. facility)

2010-2020

bb.	(Neighborhood Park)	Midlothian area, north of Route 60
cc.	(Neighborhood Parks)	4 Parks, Route 10 / Route 301 interior corridor
dd.	(Neighborhood Park)	East of I-95 north
ee.	(Neighborhood Park)	Skinquarter
ff.	(Neighborhood Park)	South Chester
gg.	(Recreation Center)	Ettrick Park Expansion (30,000 sq. ft. facility)

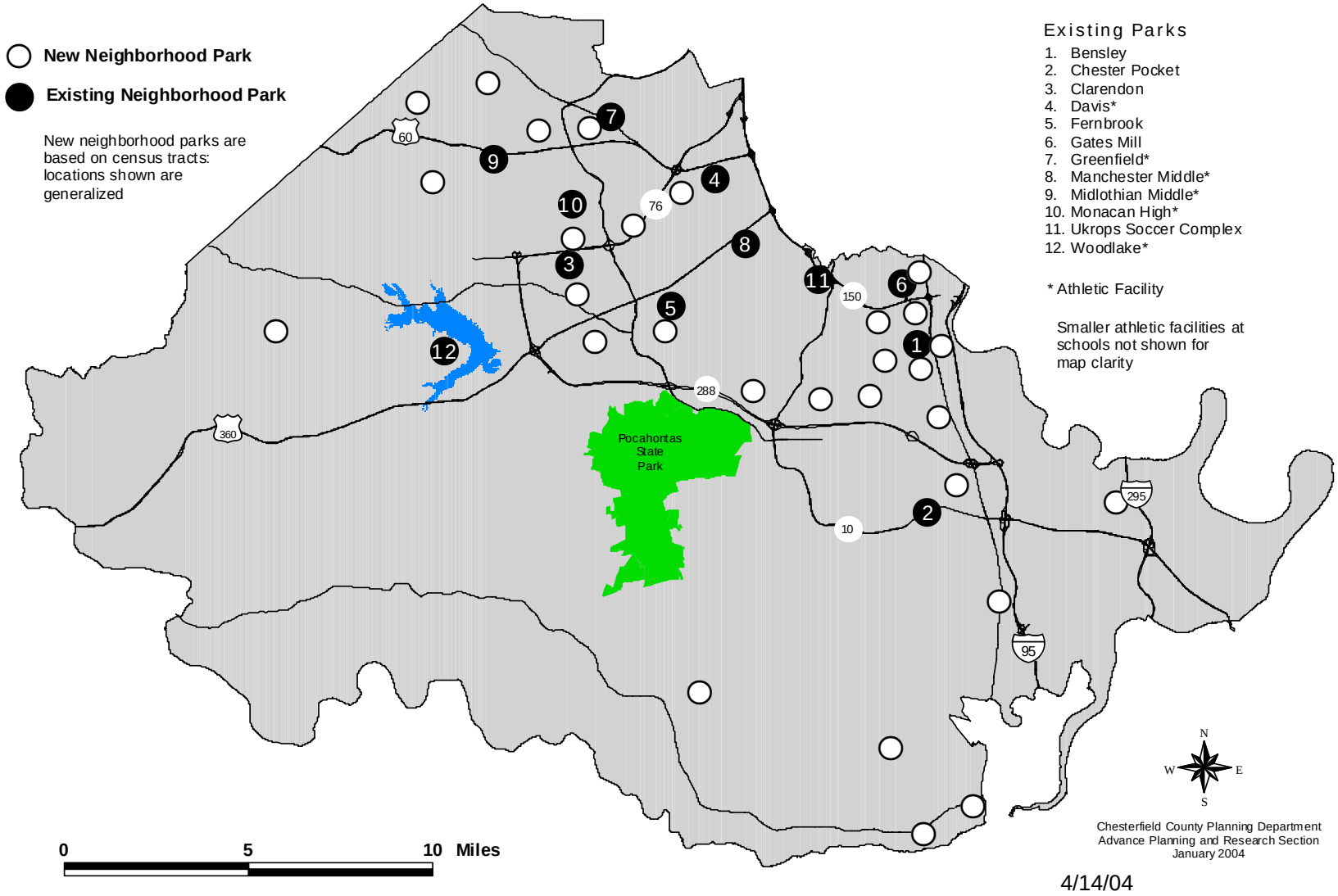
2015-2020

hh.	(Regional Park)	Eastern Matoaca
ii.	(Community Park)	Harrowgate (formerly South-Eastern Area)
jj.	(Community Park)	Enon (formerly Eastern Area)
kk.	(Recreation Center)	Enon (20,000 sq. ft. facility)
ll.	(Recreation Center)	Bensley Expansion (20,000 sq. ft facility)
mm.	(Special Purpose Park)	James River Historic Trail

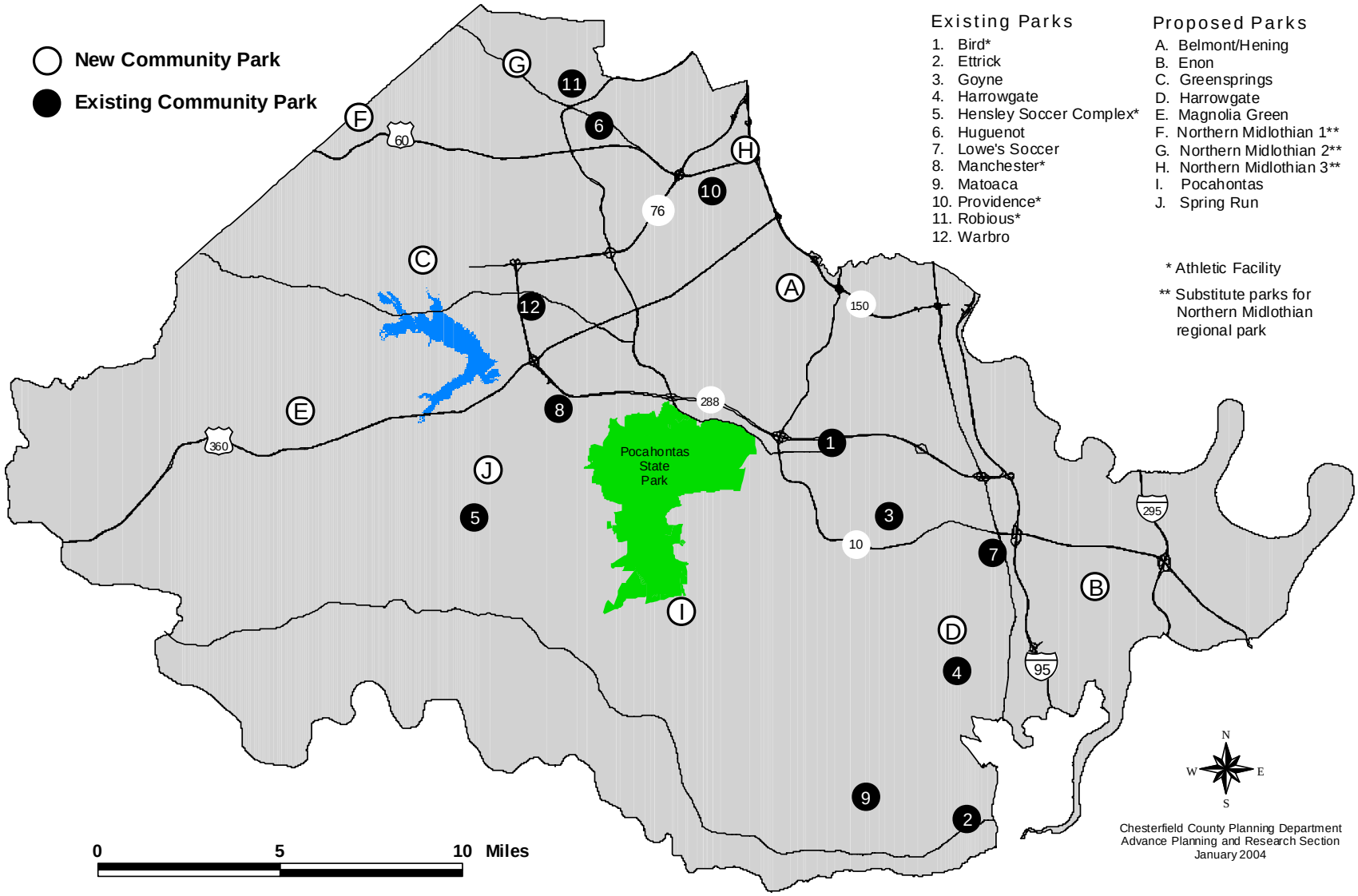
Note: Special purpose parks preserve and interpret unique recreational, cultural or environmental resources and new parks may be added to proposed sites if determined to be of significant value through future studies.

Recommendations may be implemented through private/public sector partnerships for funding and developing future parks and recreational facilities.

Public Facilities Plan: Neighborhood Park Recommendations



Public Facilities Plan: Community Park Recommendations



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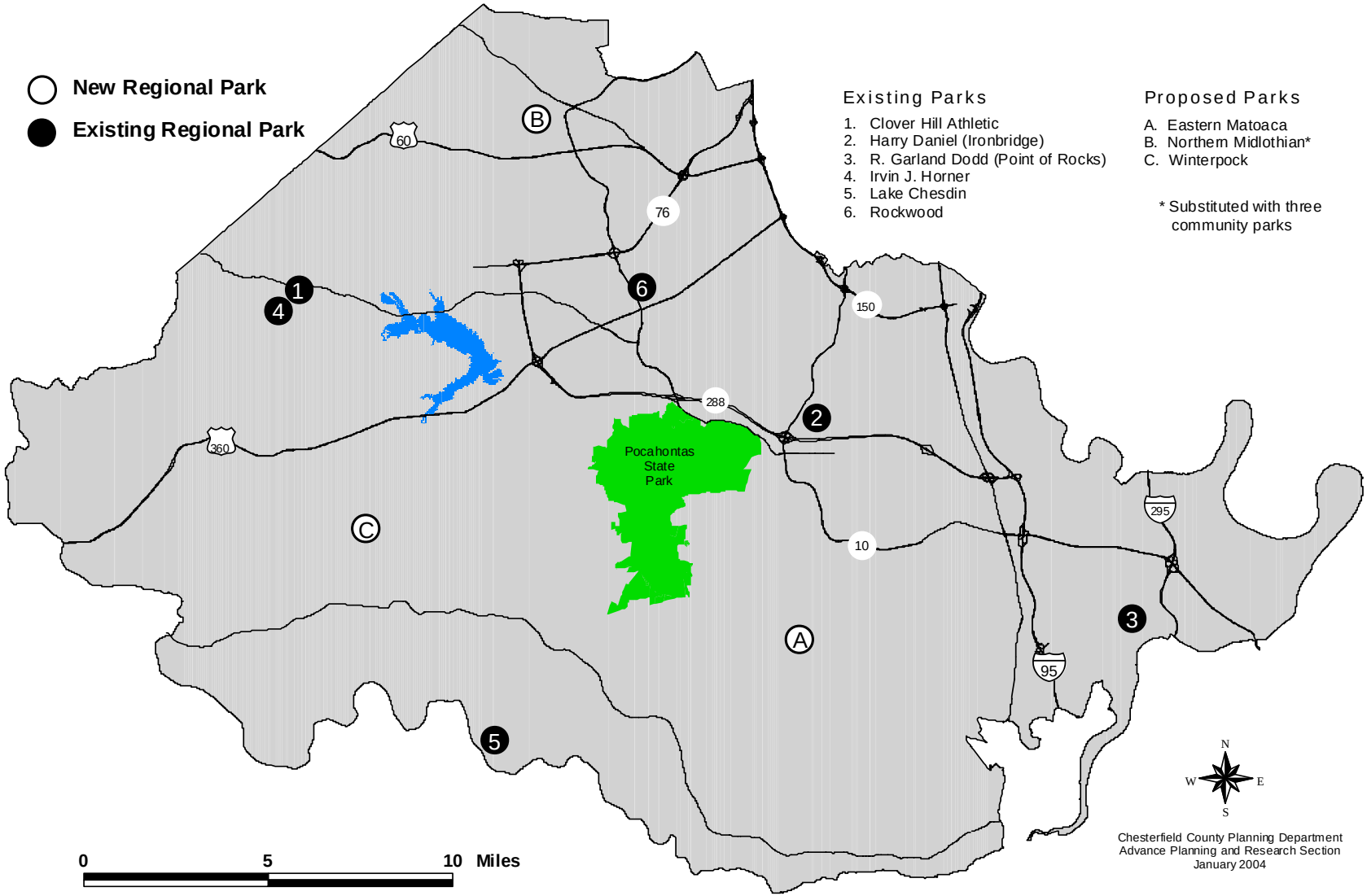
Public Facilities Plan: Regional Park Recommendations



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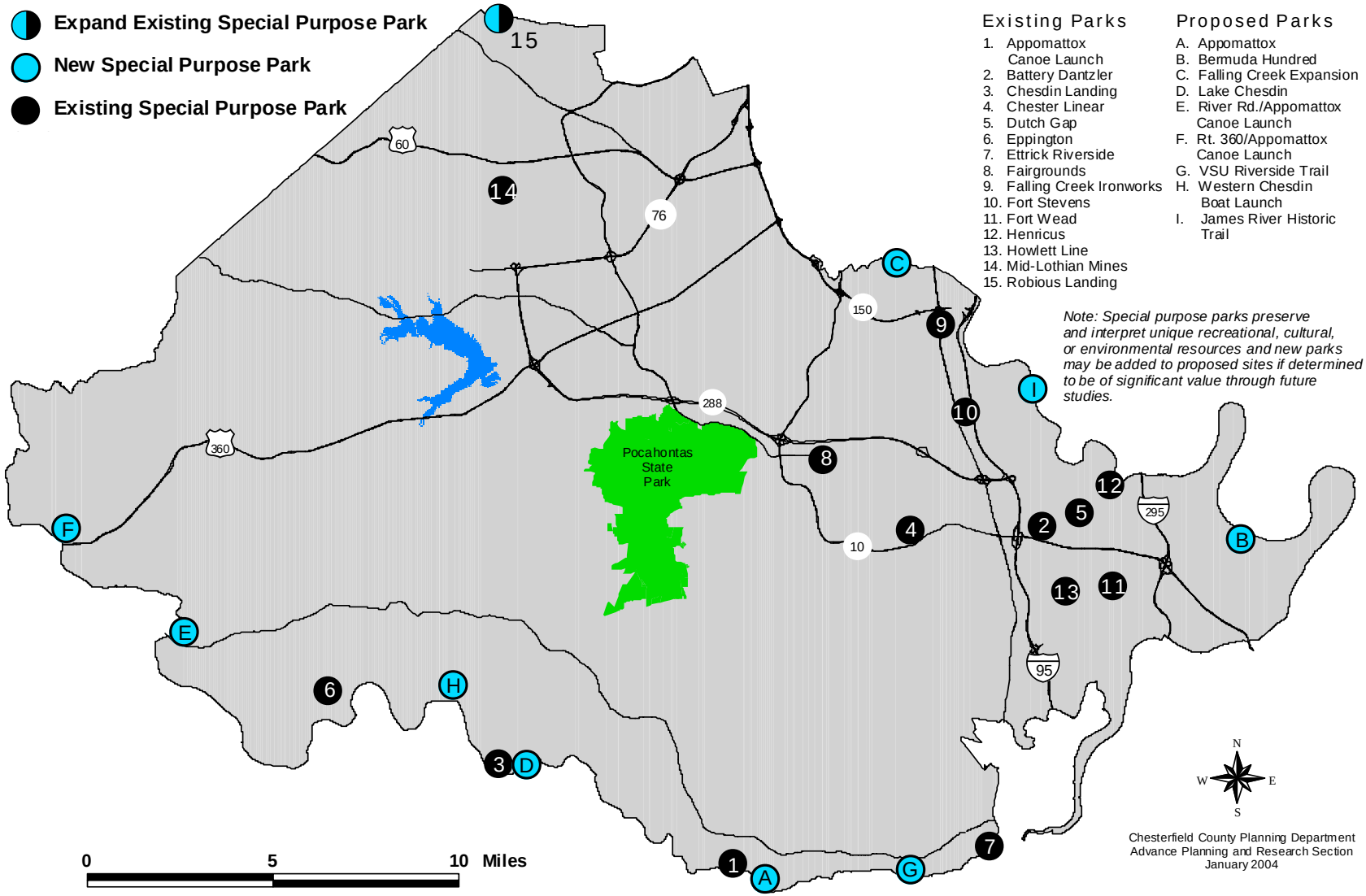
Public Facilities Plan: Special Purpose Park Recommendations



4/14/04

POLICE FACILITIES

Highlights

- To serve existing developed areas and new population growth by the year 2022, the following new police facilities will be needed:
  - One new district police station
  - One new police evidence and storage facility
  - Three new community policing offices

Introduction

This element of the Plan projects needs for future police facilities.

Existing Facilities

There are two levels of facilities serving uniform operations: police stations and community policing offices. Stations are bases of operations for larger county areas, and are always open for public assistance. There are currently three county police stations. Police Headquarters, located at the county government center, houses police administrative, investigative, and support functions. The Midlothian District Station, located on Providence Road near the Midlothian Turnpike, serves as the base of north county uniform operations. The Chester District station, located on West Hundred Road, just west of Jefferson Davis Highway, serves as the base of south and east county uniform operations. The Midlothian and Chester stations provide space for roll call, officer mail and reporting, and district commanders. They do not provide space for processing arrests, vehicle maintenance, or other support functions. Stations are staffed 24 hours a day, with officers on duty to respond to the public.

There are currently eight community policing offices. These provide space for community policing officers and citizens to hold meetings and training sessions, and for police officer paperwork. They are not typically staffed on a consistent basis. Existing community policing facilities have been provided using donated space and equipment.

Level of Service

There are three level-of-service indicators for the Police Department: crime rates, response times, and citizen satisfaction surveys.

- ***Crime Rates**:* Since 1998, police calls have increased by eight percent countywide. Communities with higher crime rates and police call activity are generally located along older commercial corridors or in areas with significant commercial development (such as the Genito and Robious communities). About 54 percent of serious crime occurs in commercial areas countywide. The county has police facilities in all communities with higher than average crime rates, except in the Bellwood and Genito communities.

- ***Response Times**:* The Police Department tracks response times to emergency service calls by three different priority levels. Priority 1 calls are life-threatening incidents. Priority 2 calls are non life-threatening emergency incidents. Priority 3 calls are non-emergency incidents. The average response time for Priority 1 calls was 2.96 minutes in 2000 (January-July), and 3.35 minutes in 2002. This figure measures the average response time required from call receipt to police officer arrival at an incident. Response times slightly increase with distance from police stations, since existing stations and officers on the beat are located in areas with the highest call rates. The major exception to this pattern is the area west of Route 288. This area is located at least five miles from a police station, and had slower response times in 2002, suggesting the need for a new police station in the area.

- ***Citizen Satisfaction Survey**:* The Citizen Satisfaction Survey conducted in 1998 and 2001, had several questions related to public safety. The survey explored citizen perceptions about feelings of safety, the response time of public safety departments, and the adequacy of county crime prevention programs. Survey results indicated that citizens generally feel safe in the county, and perceptions of safety improved from 1999 to 2001. Although survey results indicate a potential need to enhance crime prevention efforts, it is important to note that police resources are limited, and that allocating more resources in crime prevention programs may have a negative impact on response times, especially for non-emergency calls. The Police Department is expanding

community policing and other efforts. Public facilities planning can improve customer service by locating additional police facilities in close proximity to public spaces, such as shopping areas (where the survey indicated some citizens' feelings of insecurity). This will increase public visibility of police officers, improve efficiency by providing patrol officers additional locations to call-in reports, and establish a physical presence to help serve area residents.

Findings

This analysis considered potential needs for future police facilities, using the geography of existing beats, growth trends, and per capita calls for service. The needs of smaller county areas were also examined, using police call and incident data, and indicators for each of the 25 county communities. Recommendations for community policing offices are based on the location of existing community policing programs and calls for service.

- ***West 360 Corridor Station:*** Increasing population, commercial development, service call growth, and worsening traffic conditions in the western Route 360 corridor will require an enhanced police presence in the area. A new police station is needed to serve the west county area, and should be located with convenient access to the future Powhite extension.

- ***Community Policing Offices****:* Community policing offices should be planned in partnership with communities served by these offices. Traditional community policing offices serve a small geographic area, with a specific population. The location of these facilities should be based upon the goals for each office. Community policing offices may serve the general public, or be focused on the specific neighborhood or community, based on the program and schedule of community policing officer(s) working in the area. Expanded community policing offices may include space for police officers to hold meetings and call in reports, and staff to respond to citizen inquiries. These offices may offer regular office hours, public access for routine police assistance, and space for community group meetings.

- ***Support and Administrative Facilities****:* Police support and administrative functions are generally centralized. Because of the nature of police work, the need to interact with others in the department, the location of courts, magistrates, and the jail, full decentralization of support and administrative functions would affect operational efficiency. Police officers need to come to the government center to process arrests, maintain vehicles, obtain warrants for arrests, etc. Currently, these functions are located in close proximity to one another. Travel time for police officers is limited to one trip to the government center.

Locational Criteria

- Police stations should be located to easily serve multiple beats, preferably located at a juncture of multiple beats, with quick (preferably direct) access to a major arterial road. If possible, they should be located near two arterial roads that offer both east-west and north-south travel.
- Specialized community policing offices serving a limited community (such as a shopping area or apartment complex) should only be located within communities with an active community policing program.
- Expanded community policing offices should be located at or near a community focal point. They do not require access to major arterial roads. However, to provide opportunities for usage by patrol officers, thus increasing police presence in the community, facilities should be located conveniently. These facilities should offer adequate space for community and police meetings.
- Community policing offices may be located within shopping centers, shopping malls, or as independent structures.

Recommendations

The following recommendations will further Comprehensive Plan goals for orderly development, by extending new station resources in the high growth west county area. Additionally, these recommendations will promote Comprehensive Plan goals for sustaining neighborhoods, by locating community policing offices in established communities.

2002-2007

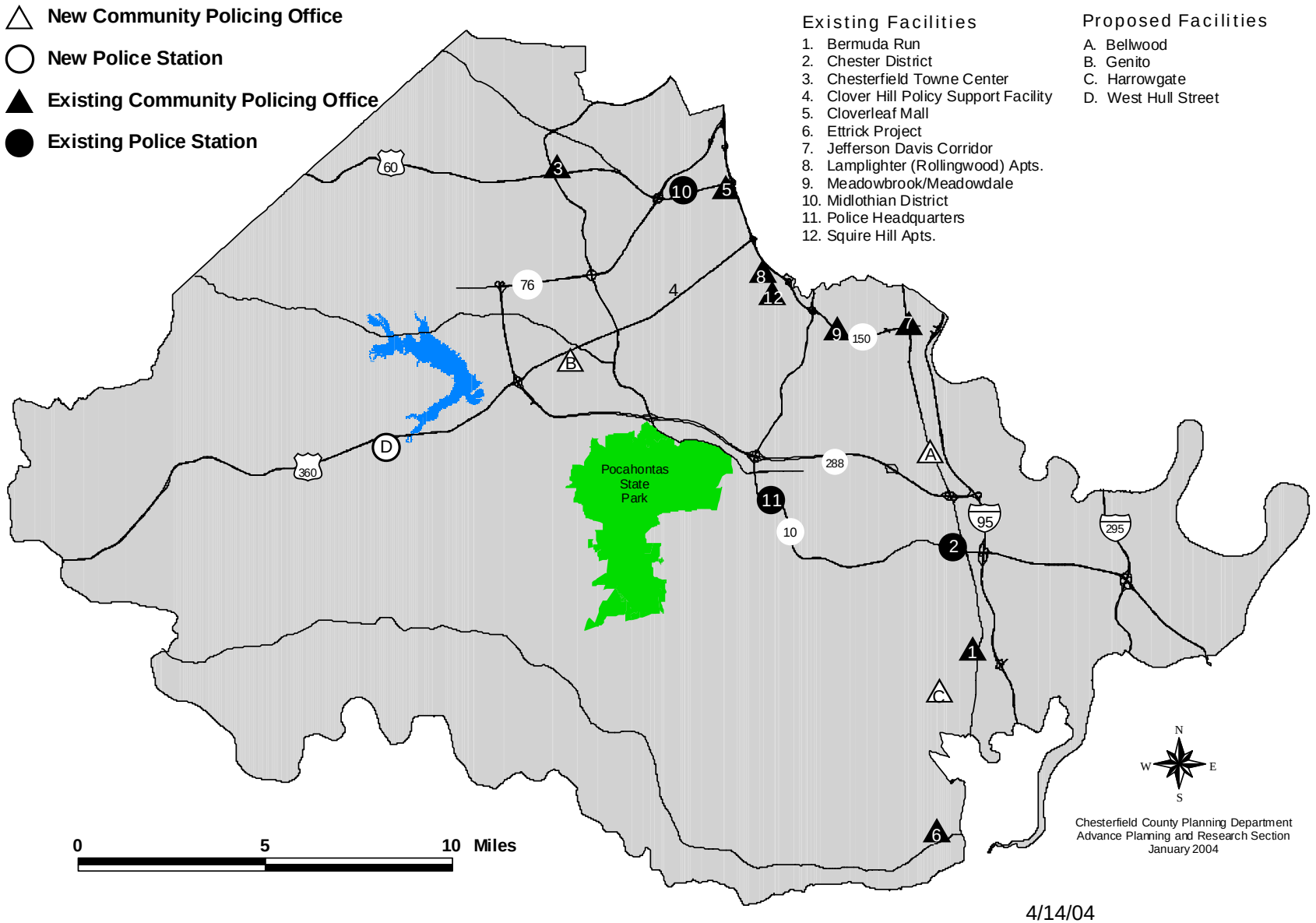
a. **Western Hull Street District Station:** Construct a new police station in the western Route 360 corridor area.

b. **Genito Community Policing Office:** Open an expanded community policing office in Genito community, convenient to Hull Street and Genito Roads.
c. **Enon Training Center:** Complete the Enon Training Center for public safety personnel.
d. **Police Evidence and Storage Facility:** Construct a new police evidence and storage facility in the government center area, located with future public safety facilities. Currently facilities housing property are dispersed in the county complex, creating inefficiency for police officers, and inconvenience for citizens.

2007-2022

e. **Harrowgate Community Policing Office:** Open an expanded community policing office in the Harrowgate community, co-located with other public facilities in the community, or along the Jefferson Davis corridor.
f. **Bellwood Community Policing Office:** Open an expanded community policing office in the Bellwood community, co-located with other public facilities in the community, or along the Jefferson Davis corridor.

Public Facilities Plan: Police Recommendations



4/14/04

SCHOOLS

Note to the Reader
Data Sources: All data pertaining to past and current school facilities and programs, student capacity, and enrollment has been supplied by Chesterfield County Public Schools. All other data is from the Chesterfield County Planning Department, unless noted otherwise. Numbers are rounded where possible.

Highlights

- Between 2003 and 2022, school enrollment is projected to increase by as many as 5,800 new students.
- The following additional facilities will be needed to serve existing development and growth for the next 20 years:
  - One expanded and five new elementary schools
  - One expanded and two new middle schools
  - One expanded and two new high schools

Introduction

Chesterfield County Public Schools (CCPS) is the 80th largest public school district in the U.S., with 56 comprehensive schools and two alternative schools (Chesterfield Community High School and Perrymont Middle School) and a Fall 2003 enrollment of 53,762 students. Schools are the largest county public facility in terms of building area, with the second largest land area (after parks). Since 1995, middle and high school enrollment has outpaced facility capacity and improvements; elementary school capacity has kept pace with student growth.

Existing Facilities Summary

School Type	Number Of Schools	Fall 2003 Capacity (students)	Site Area (acres)	Building Area (sq. ft.)	Temporary Trailers	Fall 2003 Enrollment	% of Capacity
Elementary	36	24,651	708	2,716,903	139	24,121	98%
Middle	11	12,225	420	1,466,096	92	13,333	109%
High	9	15,411	651	2,224,330	40	16,308	106%
	56	**52,287**	**1,779**	**6,407,329**	**271**	**53,762**	**103%**

CCPS facilities are currently divided as follows:

School Type	Average Service Area	Typical Location	Student Capacity
Elementary (K - 5)	Neighborhoods 1.2 square miles	Within neighborhoods or along a major road.	Range: 380 to 950 Average: 690
Middle (6 – 8)	Elementary Clusters (3+ elementary schools	Fronting major roads	Range: 630 to 1,620 Average: 1,110
High (9 – 12)	County Regions (1 to 3 middle schools)	Fronting major arterial roads	Range: 1,570 to 1,990 Average: 1,710

In addition, CCPS offers a variety of specialized programs:

- English as a Second Language (ESL) at 11 schools
- High School Specialty Centers: 11 programs at nine high schools
- Two Governor's Schools (Appomattox Regional and Maggie Walker)
- Gifted and Special Education programs
- Early Childhood Programs for children over two years of age with disabilities

Level of Service Indicators

This Plan evaluates three level-of-service indicators: 1) legal attendance requirements; 2) attendance zones; and 3) convenience of school facilities.

- **Legal Attendance Requirements**

  State law requires CCPS to offer educational services to county residents who are at least five years old, who have not passed their 18th birthday by September 30th of the school year. Exceptions include children attending private schools, privately tutored students, home-educated students, and minor-aged high school graduates. CCPS also has responsibility to educate students with disabilities (ages 2-21) and the homeless. Enrollment projections used throughout this document are based on the number of school-aged persons, minus exempted school-aged persons and dropouts.

- **Attendance Zones**

  CCPS has divided the county into 56 attendance zones to balance service demands and facility capacity. Zones may be changed, or added when new schools are constructed, at the discretion of the School Board. There are currently 36 elementary, 11 middle, and nine high school zones. No attendance zones are assigned to specialty programs or regional schools. Twelve percent of all CCPS students attend schools located outside of home attendance zones, and are thus "exported" to other county schools. The reasons for such flexibility can be summarized as: 1) a widely used waiver system; 2) the popularity of specialty programs; and 3) consumer choice. Ultimately, attendance boundaries are porous, and do not always reflect or promote student convenience based on geographic proximity. While there is overall system-wide equilibrium between imported and exported attendance, the effects are not borne evenly at specific schools. In some instances, this may contribute to school overcrowding.

Exported Attendance (Fall 2002)
(students attending schools outside their attendance zone)

School Type	Exported Attendance
Elementary	12%
Middle	9%
High	14%
Total	**12%**

- **Convenience of School Facilities**

  The 1995 Plan stated that schools should be located to "*minimize travel distance for current as well as future students*." This goal attempts to locate schools near students in population centers, to minimize disruptions and inconvenience caused by long school commutes. Facility convenience implements Comprehensive Plan goals of *encouraging orderly development* by locating facilities near populations served, and *sustaining neighborhoods* by recognizing that convenient schools function as centers of community life. Elementary schools are convenient to most students, since they are more numerous and traditionally serve neighborhoods. In contrast, fewer middle and high schools serve larger areas and are convenient to fewer students. Due to the existing road network and rural areas, schools cannot be convenient to every student. However, Plan facility recommendations attempt to maximize student convenience where possible.

School Facility Convenience (Fall 2002)

Community Area	Students Living Within 5 Minute Driving Distance of School	Students Living Within 3 Mile Driving Distance of School
Elementary	91%	90%
Middle	64%	55%
High	53%	41%
Total	**73%**	**66%**

Findings

In order to plan for future school facility needs, we must estimate future enrollment demands and the ability of existing school facilities to meet these needs. This analysis considers *existing system conditions* (school capacity, enrollment, and deficiencies in school facilities relative to populations served); *population growth* (projected growth rates of school age persons); *growth trends* (probability of growth

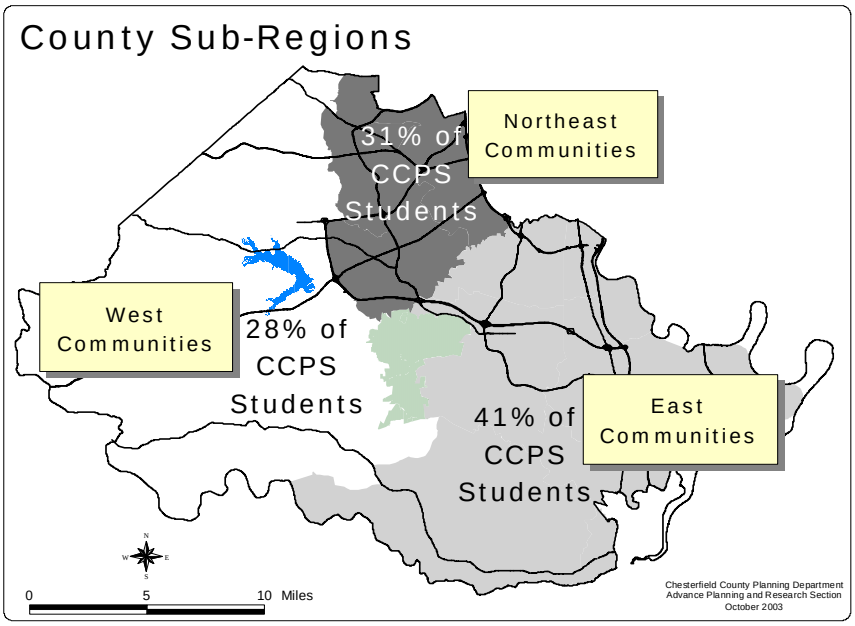
within existing elementary clusters, and middle and high school attendance zones); and *enrollment projections* (projected CCPS enrollment rates, countywide and in geographic sub-areas).

- **Existing System Conditions: Elementary Schools (Summary)**

  Fall 2003 elementary school enrollment was 98 percent of capacity system-wide. Seventeen elementary schools are overcrowded, ten of which are significantly overcrowded. Nineteen schools have more seats than students. Viewed as a system, elementary capacity and enrollment are balanced. This analysis examines elementary school enrollment and capacity within existing elementary clusters. Overcrowding at a school can often be mitigated by excess capacity at other nearby schools within a cluster or in adjacent clusters, provided that additional capacity at these schools is available. Where additional in-cluster capacity is not available, school expansion or construction may be warranted. Clusters 1, 5, 6, and 7 are currently overcrowded.

- **Existing System Conditions: Middle and High Schools**

  This analysis examines middle and high school enrollment and capacity in terms of the entire system and three county sub-regions (*based on existing communities and development patterns*): *East Communities* (areas generally south and east of Hull Street); *Northeast Communities* (areas generally north of Hull Street, east of Rt. 288); and *West Communities* (areas west of Rt. 288 and Pocahontas State Park).



Countywide middle and high enrollment is unequally distributed for three reasons: 1) schools are not evenly distributed; 2) attendance zone boundaries do not always promote student convenience; and 3) schools import attendance unequally. Although attendance zones and imported attendance are operational (not facility) issues, they do affect enrollment and overcrowding at many schools. Attendance zone boundaries and imported attendance are subject to change, unpredictable over the 20-year Plan timeframe, and have a significant impact on new school needs. Therefore, this analysis focuses on school convenience (i.e. how close schools are located to students) instead of seeking to plan within existing attendance zone boundaries. This approach seeks to evenly distribute schools within population centers for the maximum possible student convenience and facility efficiency. (*It should be noted that CCPS uses existing middle and high school attendance zones for long-term planning purposes, to minimize long-term attendance zone boundary changes and resulting family disruptions).*

- **Existing System Conditions: Middle Schools**

  Fall 2003 middle school enrollment was 1,108 students (nine percent) above capacity. Eight schools are overcrowded. Carver, Falling Creek, Manchester, Salem Church, and Swift Creek are significantly overcrowded. Chester and Providence have more seats than students. Viewed as a

system, middle schools are overcrowded. While some attendance zone changes and facility reuse options are possible, additional facilities are needed in the short-term. Two out of three middle school students live within five minute driving distance of existing middle schools.

Middle School Convenience (Fall 2002)

Community Area	Resident Students	Living Within 5 Minute Driving Distance	Living Within 3 Mile Driving Distance
East	5,512	70%	68%
Northeast	4,181	71%	68%
West	3,662	54%	52%
Total	**13,355**	**66%**	**63%**

- **Existing System Conditions: High Schools**

  Fall 2003 high school enrollment was 897 students (six percent) above system-wide capacity. Six high schools are overcrowded, four of which are significantly overcrowded: L.C. Bird, Clover Hill, Manchester, and Thomas Dale. Three high schools have more seats than students: James River, Matoaca (new) and Monacan. Viewed as a system, existing high school capacity and enrollment are slightly over capacity. More than half of high school students currently live within five minute driving distance of existing high schools.

High School Convenience (Fall 2002)

Community Area	Resident Students	Living Within 5 Minute Driving Distance	Living Within 3 Mile Driving Distance
East	6,211	62%	50%
Northeast	5,222	31%	29%
West	4,433	66%	42%
Total	**15,866**	**53%**	**41%**

- **Population Growth**

Population and Enrollment Summary Data

	Actual				Projections			
9/30 Population	**1990**	**1995**	**2000**	**2002**	**2007**	**2012**	**2017**	**2022**
County	213,323	239,290	262,993	275,352	305,800	334,549	362,301	391,479
School Age	47,612	54,107	59,511	61,676	64,944	65,589	66,745	70,957
% School Age	22.3%	22.6%	22.6%	22.4%	21.2%	19.6%	18.4%	18.1%

CCPS Enrollment	1990	1995	2000	2002	2007	2012	2017	2022
Elementary (K-5)	22,461	23,634	23,439	23,896	23,107 to 23,669	22,458 to 23,581	22,998 to 24,740	24,815 to 27,219
Middle (6-8)	9,987	11,457	12,548	13,267	13,503 to 13,832	12,778 to 13,417	12,582 to 13,534	13,081 to 14,349
High (9-12)	12,012	13,966	15,225	15,906	17,442 to 17,866	17,301 to 18,167	16,488 to 17,737	16,362 to 17,948
Total	44,480	49,057	51,212	52,834	54,077 to 55,392	52,560 to 55,190	52,091 to 56,036	54,281 to 59,541

Note: Total enrollment includes a small number of "ungraded" students, and is slightly greater than the sum of graded enrollment.

- **Growth Trends**

  This analysis considered three factors to help anticipate the likelihood, direction, and extent of future growth in smaller geographic areas: approved tentative subdivision lots; potential new

dwelling units based on existing Comprehensive Plan designations; and the number of new housing units built within the past five years.

- **Enrollment Projection Summary**

  Over the past decade, there have been significant changes to public education nationwide, including emerging public school *alternatives* (such as homeschooling, cyber-schools, and distance learning), *choice initiatives* (such as charter schools, vouchers, and magnet schools), and *accountability measures* (such as SOLs and the No Child Left Behind Act). Due to the changeable nature of issues affecting long-term public school enrollment trends, the following tables include "low" and "high" enrollment projections, by school type. Shading in the following tables denotes overcrowding. "Resident students" denotes the estimated number of CCPS students living within each specific geography (which may differ from actual enrollment, due to imported attendance). Projected enrollment figures are based on high projection figures (worst-case scenario), of the number of school-aged persons, minus exempted school-aged persons and dropouts.

- **Elementary School Enrollment Projections**

System-wide School Enrollment Projections

Year	Students	Capacity	Shortfall	Minimum System-wide Facility Needs
2003	24,121	24,651	0: 530 student capacity surplus	None
2007	23,107 to 23,669	24,651	0: 982 student capacity surplus	None
2012	22,458 to 23,581	24,651	0: 1,070 student capacity surplus	None
2022	24,815 to 27,219	24,651	164 to 2,568	Up to four new elementary schools and/or expansions at existing elementary schools

Cluster Enrollment Projections *(based on students living in each cluster)*

Cluster	Existing Capacity	2002 Resident Students	2007 Resident Students	2012 Resident Students	2022 Resident Students
1	2,547	2,809	2,676	2,569	2,809
2	2,368	2,122	2,109	2,095	2,346
3	3,709	3,202	3,147	3,073	3,366
4	3,850	3,397	3,431	3,446	3,885
5	5,465	5,463	5,518	5,585	6,731
6	3,336	3,170	3,158	3,125	3,672
7	3,376	3,605	3,651	3,678	4,412

Note: resident student figures for clusters differ from actual enrollment, due to imported attendance.

- **Middle School Enrollment Projections**

System-wide Enrollment Projections

Year	Students	Capacity	Shortfall	Minimum System-wide Facility Needs
2003	13,333	12,225	1,108	One new middle school and/or expansions at existing middle schools
2007	13,503 to 13,832	12,225	1,278 to 1,607	Two new middle schools and/or expansions at existing middle schools
2012	12,778 to 13,417	12,225	553 to 1,192	One new middle school and/or expansions at existing middle schools
2022	13,081 to 14,349	12,225	856 to 2,124	Two new middle schools and/or expansions at existing middle schools

Community Enrollment Projections *(based on students living in each community)*

Communities	Existing Capacity	2002 Resident Students	2007 Resident Students	2012 Resident Students	2022 Resident Students
East	4,684	5,512	5,551 to 5,687	5,227 to 5,490	5,413 to 5,938
Northeast	3,562	4,181	4,083 to 4,185	3,748 to 3,934	3,526 to 3,968
West	3,979	3,662	3,867 to 3,961	3,802 to 3,993	4,143 to 4,544

Note: resident student figures for communities differ from actual enrollment, due to imported attendance.

- **High School Enrollment Projections**

System-wide Enrollment Projections

Year	Students	Capacity	Shortfall	Minimum System-wide Facility Needs
2003	16,308	15,411	897	One new high school and/or expansions at existing high schools
2007	17,742 to 17,866	15,411 (17,161)	2,331 to 2,455 (581 to 705)	One new high school and/or expansions at existing high schools
2012	17,301 to 18,167	15,411 (17,161)	1,890 to 2,756 (140 to 1,006)	One new high school and/or expansions at existing high schools
2022	16,362 to 17,948	15,411 (17,161)	951 to 2,537 (-799 to 787)	One new high school and/or expansions at existing high schools

Community Enrollment Projections *(based on students living in each community)*

Communities	Existing Capacity	2002 Resident Students	2007 Resident Students	2012 Resident Students	2022 Resident Students
East	6,607	6,204	6,814 to 6,973	6,730 to 7,061	6,443 to 7,064
Northeast	1,704	5,214	5,539 to 5,671	5,324 to 5,587	4,626 to 5,074
West	7,100 (8,850)	4,424	5,090 to 5,202	5,248 to 5,510	5,293 to 5,804

Note: resident student figures for communities differ from actual enrollment, due to imported attendance. Numbers in parentheses assume capacity of 1,750 students added by the approved Cosby Road High School.

Locational Criteria

- Provide school facilities to adequately and equitably serve all areas of the county.
- Provide schools at locations that minimize travel distance for students.

- Middle and high schools should be located with convenient access to a major arterial road. Principal access should not be through residential neighborhoods. Future school sites should be located where direct access to collector and/or major arterial roads can be provided. In addition to other mitigating road improvements, school construction should include the Thoroughfare Plan roads needed to provide connections between existing collector and arterial roadways, in order to provide a balanced distribution of traffic.
- Middle and high schools should not be located within residential neighborhoods. Where middle and high schools are adjacent to neighborhoods, active recreation and large parking areas should be oriented away from neighborhoods. Sports facilities and parking areas should be buffered to protect nearby homes.
- Elementary school sites should be located with access to a collector street.
- Elementary schools may be located within residential neighborhoods; site design should minimize impacts of the recreational areas on adjacent residences.

Other Criteria

- Schedule school expansion and/or new construction to relieve overcrowding and to respond to new growth. Priority shall be given to renovating existing facilities. Second priority shall be given to construction of new facilities where renovation alone cannot adequately meet facility needs of existing students.
- Provide capacity so that schools do not exceed 120% capacity. Most schools should be below 100% capacity. Program changes should not decrease capacity at overcrowded schools.
- Coordinate school site planning and development with the Parks and Recreation Department, in order to maximize community recreational facilities.
- Develop regional athletic facilities serving multiple high schools if feasible.
- Site acquisition should be in advance of development, to secure optimal locations and minimize costs. Site development should be in conjunction with or following growth, not prior to development of surrounding areas. School facility development should not induce growth by extending urban services into undeveloped areas.
- New schools in developing areas should meet the following student capacity and site area criteria (+/- 10%):

School Type	Recommended Capacity	Recommended Site Area
Elementary	775 students	20 - 30 acres
Middle	1200 students	50 - 60 acres
High	1800-2000 students	70 - 100 acres

In established, developed areas, school capacity and site area guidelines shall be flexible, since infill parcels may have greater constraints.

- Existing schools may be converted from one school type to another, or replaced with a new school, provided that the converted school is consistent with the Locational and Other Criteria of this Plan, and is located within the same geographic area identified in Plan recommendations. Original student capacity displaced by school conversion or replacement may be assigned to a new school facility in the original school's geographic service area, subject to the Locational and Other Criteria of this Plan. Should the existing Clover Hill High School be replaced with a new school, the new school should be located in the area generally north of Hull Street Road and east of Old Hundred Road and open in 2009 or later.

Recommendations

The following recommendations serve Comprehensive Plan goals for sustaining neighborhoods by encouraging school facility development in established neighborhoods. These recommendations also promote Comprehensive Plan goals for orderly development, by locating future schools in planned growth areas. These recommendations may also require programmatic and/or operational changes at existing schools, at the discretion of the School Board, to optimize use of existing facilities. Finally, locational recommendations for new schools are generalized, not site-specific.

By 2012

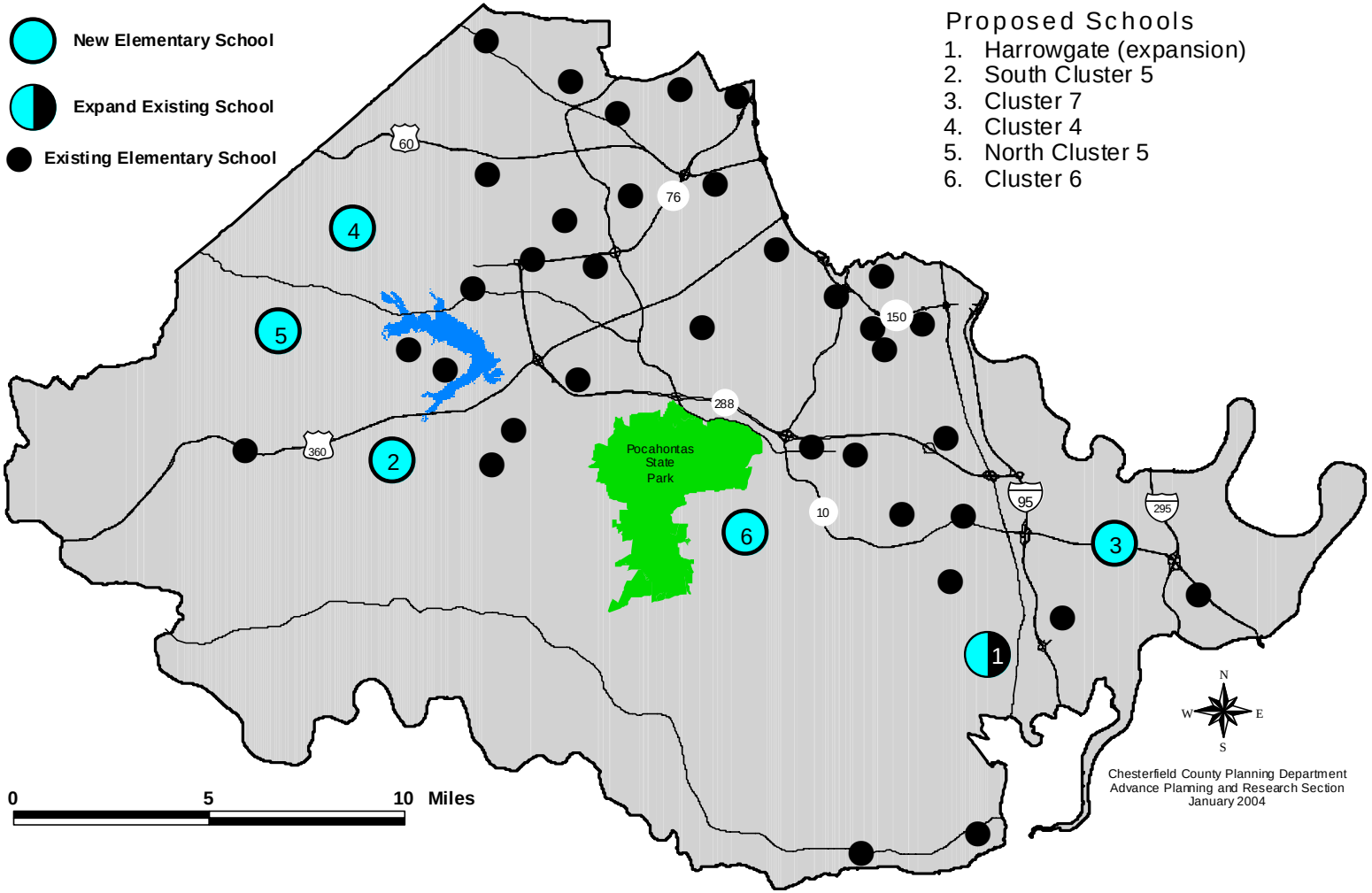
a. (Cluster 7) Expand capacity at Harrowgate Elementary School.

b. Construct a new middle school in the Courthouse Road area, between Hull Street and Reams Roads, or in the vicinity of the west Hull Street corridor, between Woodlake Parkway and Baldwin Creek Road.
c. Construct a new middle school in the vicinity of the Route 10 corridor, between I-95 and I-295.
d. Renovate and increase capacity at L.C. Bird High School.
e. (Cluster 5) Construct a new elementary school with capacity for 775 to 900 students, south of Hull Street, between Spring Run and Grange Hall Elementary Schools.
f. (Cluster 7) Construct a new elementary school with capacity for 775 students, in the vicinity of the Route 10 corridor, between I-95 and I-295.

2012 - 2022

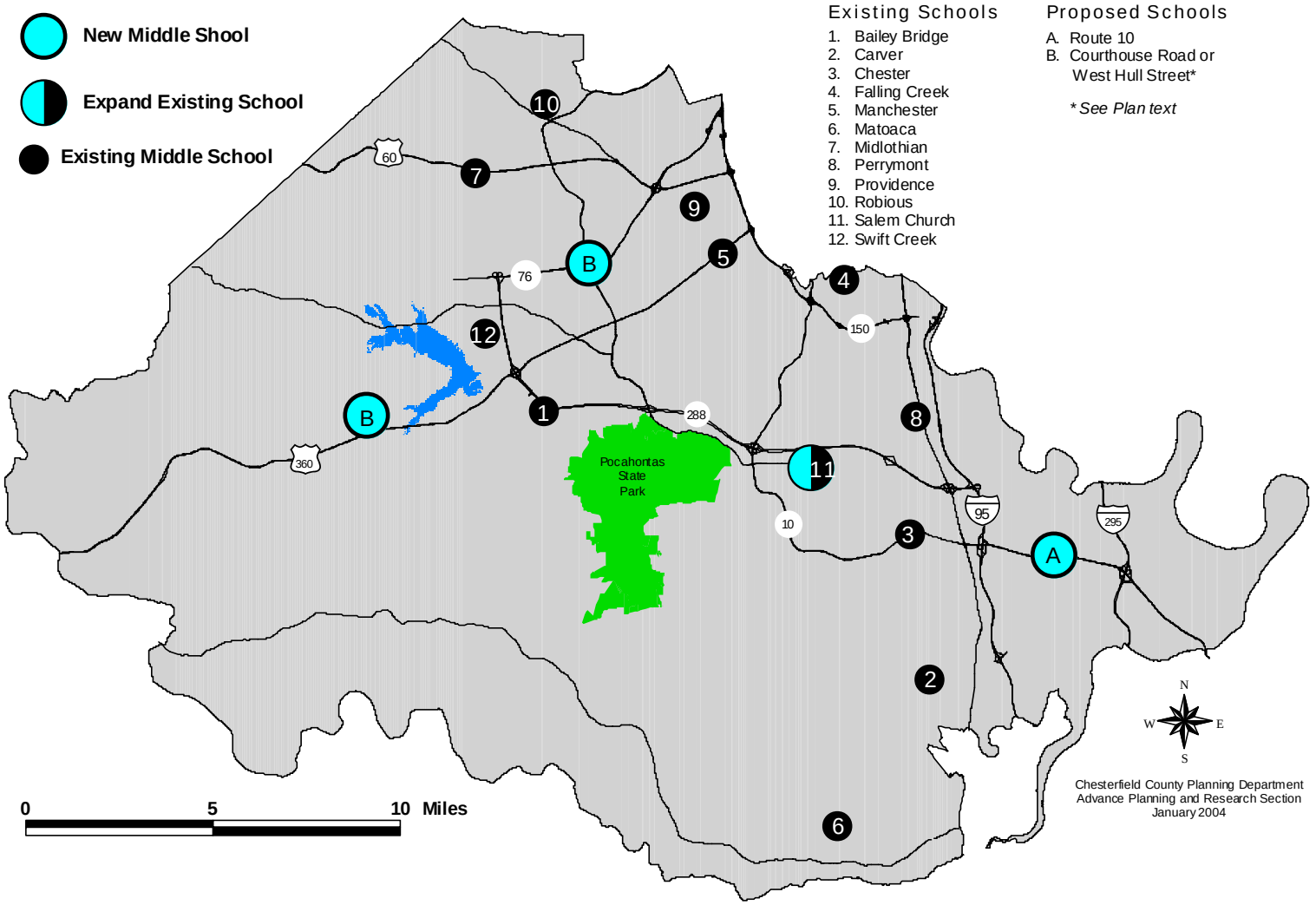
g. Construct a new high school with capacity for 1,750 students, in the area generally bordered by Courthouse Road, Powhite Parkway, Chippenham Parkway, and Falling Creek.
h. (Cluster 4) Construct a new elementary school with capacity for 775 students, west of Watkins Elementary School, north of Genito Road.
i. (Cluster 5) Construct a new elementary school with capacity for 775 students, west of Woolridge Elementary School, south of Genito Road.
j. (Cluster 6) Construct a new elementary school with capacity for 775 students south of Beach Road and east of Pocahontas State Park.
k. Expand capacity at Salem Church Middle School by 250 students.

Public Facilities Plan: Elementary School Recommendations



4/14/04

Public Facilities Plan: Middle School Recommendations



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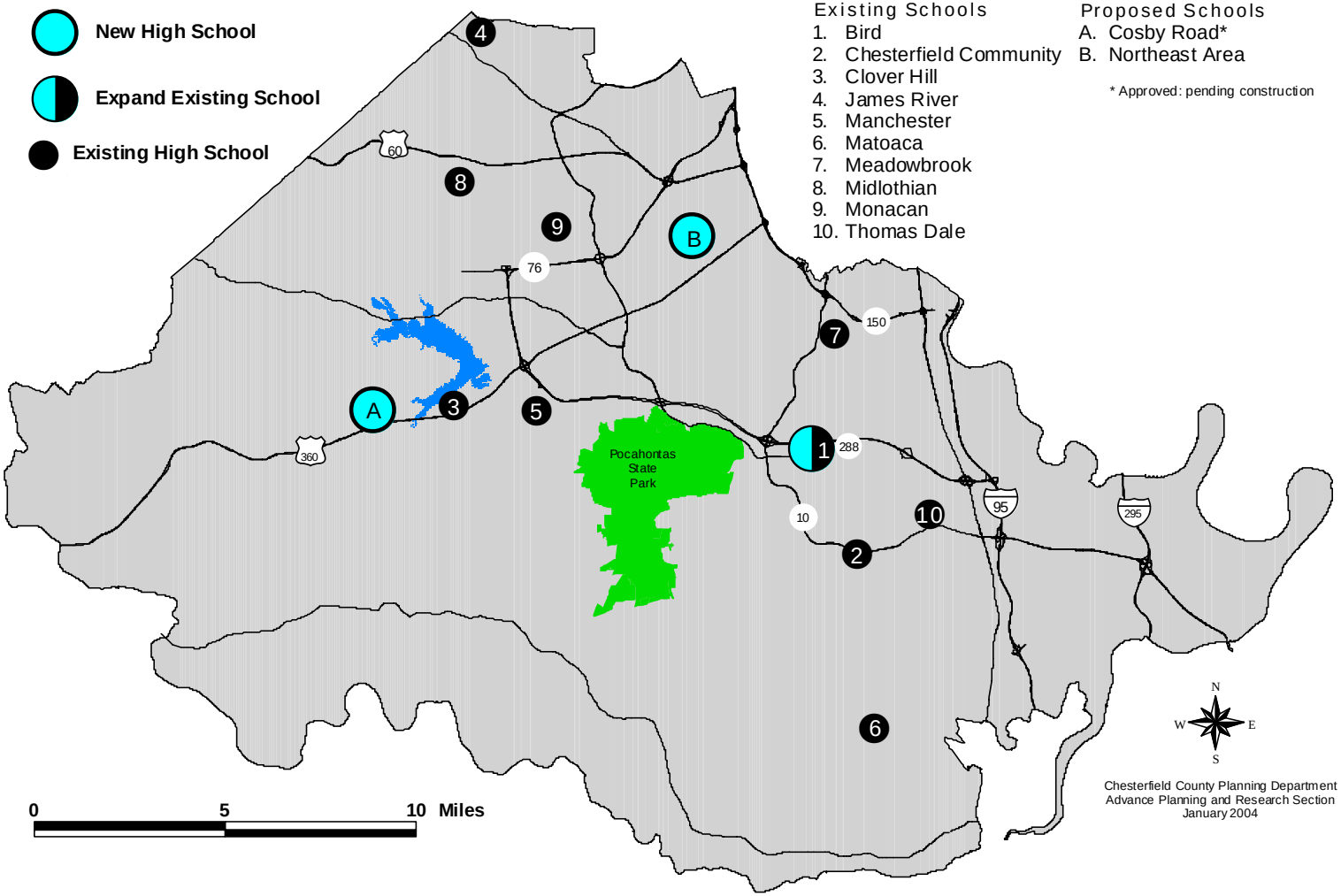
Public Facilities Plan: High School Recommendations



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GOVERNMENT ADMINISTRATION

Existing Facilities

Administrative offices for county government operations are highly centralized, located within the government center area (a 610 acre area bordered by Route 10, Krause Road, and Courthouse Road). This complex is easily accessible by Route 288, and is within reasonable driving distance to most county residents (*ten-minute driving distance to approximately 36 percent of county residents, 15 minute driving distance to 73 percent of county residents, and 20 minute driving distance to 97 percent of county residents*). The government center area includes approximately one million square feet of office space, housing nearly 3,500 county employees. There is no serious discussion at this time about decentralizing county administrative offices outside of the government center area.

Level of Service

There is no current adopted level of service standard for county administrative facilities (such as number of employees per 1,000 residents, office space per employee, or driving distance to residents served). The Government Center Master Plan (adopted in 1989, as part of the Plan For Chesterfield) provides a long-range guide for development of the government center complex. The Master Plan is pending revision, with the goal of shifting government administrative space planning into a separate document.

One measure of the adequacy of existing service levels is the Citizen Satisfaction Survey, conducted in 1998 and 2001. This survey included several questions relating to convenience of county services. Survey results indicate general public satisfaction with the location of the county government center, and with county efforts to make county services more convenient. These efforts include increased use of non-facility service solutions (such as the internet) to allow more convenient ways for the public to access county services.

JAIL FACILITIES

Introduction

This Plan element projects needs for jail facilities.

Existing Facilities

The Sheriff's Office uses two different jail facilities to house most county prisoners. A defined level of mostly pre-trial inmates are held at the county jail, located in the government center. Most other prisoners are held at the Riverside Regional Jail facility in Prince George County.

Chesterfield County Jail: The existing jail was constructed in several phases. Jail staff refers to jail buildings by letter. Building A was constructed in 1961-62, and has had four subsequent additions. It is the oldest existing facility, and includes inmate housing, jail administration, magistrates' offices, facilities for processing arrests, and jail infrastructure (kitchen, laundry, and control room). Building B was constructed in 1980 and until recently housed inmates. Building C was constructed in 1994 and also houses inmates. Building C is designed on a pod system -- a design preferred by the Sheriff's Office. Building A is in very poor condition. Building B was recently demolished for the jail renovation project. Building C is in good repair. There are severe limitations with existing jail support facilities. The overall layout of the jail is labor intensive to operate and potentially unsafe to police officers, magistrates, deputies, and inmates.

The Virginia Department of Corrections places jail capacity at 250. The space per inmate is not up to current state standards. Current standards require 70 square feet per person for the first inmate and 45 square feet for each additional inmate in a cell. The current jail offers less than 18 square feet per inmate (*Mosely, Harris and McClintock Jail Conditions Study*, August 2000). The Study also demonstrates that the current jail does not meet state standards for space in day rooms and accessory spaces.

With the exception of Building C, jail facilities are in poor condition, and do not meet the needs of the Sheriff's Office, the magistrates, police officers, or inmates. There is clearly a need for improved jail facilities. Additionally, the overcrowding problems are not just confined to inmate areas. There is inadequate space for jail infrastructure, processing inmates, offices and meeting rooms, and safe passage of deputies and prisoners. The scattered nature of the jail operations areas also adds time to the administration of the facility. An improved facility with more space and a better design would bring greater

efficiency and safer conditions to the Sheriff's deputies, magistrates and police officers. It is necessary for the county to maintain a safe, efficient local jail. The current situation is untenable for all users of the jail. The time and energy of public safety personnel is spent working around a facility that does not meet their basic needs. A better-designed facility would increase the efficiency of all the public safety personnel.

Jail Replacement Project: A bed-for-bed replacement for Buildings A and B is funded and under construction. This project will not increase rated capacity, but will improve inmate processing functions (intake, booking, and lockup), support areas, and security. Support areas will be located on the ground floor of the new facility, with inmate areas located above. The new facility will improve "program space" for various inmate programs.

Riverside Regional Jail: The Riverside Regional Jail (RRJ) is a shared jail facility. RRJ opened in 1997 and is jointly operated by Chesterfield County and six other local jurisdictions. RRJ has a rated capacity for 736 inmates. The average daily population (ADP) for Chesterfield's portion of the facility was 235 inmates for fiscal year 2000. At the end of fiscal year 2002, ADP had increased to 511 inmates. Typically, inmates are sent to Riverside following trial and sentencing, unless they are serving short sentences, or qualify for participation in a county program such as work release or home incarceration.

As part of the inter-jurisdictional agreement for RRJ, once ADP exceeds capacity an expansion process is automatically triggered. This process has been triggered, and an expansion is currently in the planning stages. After expansion, RRJ will have an ultimate design capacity for 1,368 prisoners. The future capacity needs of RRJ are difficult to estimate, since future prisoner populations will depend on the jail resources and future prisoner levels of seven different jurisdictions. The Sheriff's Office estimates that even with expansion, RRJ could reach full capacity within five years, thereby requiring additional facilities.

Level of Service

The primary level of service indicators for the jail facilities include: ADP for each month, the annual number of intakes and releases for the jail, and the number of probable cause hearings held by the magistrates. Each of these indicators affects required jail space.

Average Daily Population: Monthly average ADP of the county jail has increased from 265 inmates in 1990, to 307 inmates in 2002. At the end of fiscal year 2002, ADP was 314 inmates. This represents an average yearly increase of 1.6 percent, which is slower than population growth during the same period (2.8 percent per year).

Intakes and Releases: "Intakes" represents the number of individuals admitted to the jail over the course of the calendar year. "Releases" represents the number of individuals released from the jail over the course of a year. Intakes and releases have increased an average of 3.4 percent per year since 1990. Staff handled about over 20,000 intakes and releases in the year 2002, compared to 15,000 in 1990.

Probable Cause Hearings: Probable cause hearings are performed by the magistrates to determine whether probable cause exists for the arrest of an individual, resulting in the issuance of a warrant or a summons. Probable cause hearings have increased an average of 7.5 percent per year since 1990, from about 13,700 in 1990 to almost 23,900 in 2002.

Findings

A Community Based Corrections Plan was completed in 2000, which outlined the existing jail situation, needs for the future, and recommendations to manage the county's growing inmate population. Estimates for future needs to house inmates are as follows:

Year	Projected ADP	Jail Beds Needed
2005	704-730	880-912
2010	835-887	1,044-1,109
2015	1,044	1,305
2020	1,201	1,502
2025	1,358	1,698

Estimated ADP and jail bed needs represent total numbers, without respect to whether they are located in Chesterfield County or at the Riverside Regional Jail facility. As of March, 2003, combined ADP of the Riverside Regional and Chesterfield County jails reached 887.

Short-term jail facility needs through the year 2005 should be accommodated by the bed-for-bed county jail replacement project and planned expansions at the Riverside Regional Jail. Long-term facility needs will require additional jail construction. Part of this need may be met by additional out-of-county facilities, such as the Riverside Regional Jail and/or other potential future facilities. However, in-county jail space needs will also continue to increase. This need cannot be fully met in the long-term by the county jail. For this reason, there will be a clear need for more jail space after the year 2005.

Locational Criteria

Where possible, the jail, magistrates' offices, and police property facilities should be co-located, to allow police officers to go to one location to complete an arrest and drop off evidence. Dispersed facilities increase the time it takes for police officers to process arrests and evidence, resulting in longer times off patrol and increased overtime costs. Ultimately, there is logic to a public safety facility that would include all police and fire facilities (outside of precincts, stations, and training facilities) the jail and associated facilities, and the magistrates. Future jail facilities should be located as close as possible to the courts, and as far away from existing and planned residential areas as possible, while remaining on or near the county government complex.

Recommendations

2002-2007

a. **Jail Need Study:** Additional jail capacity needs should be determined through a study of existing and proposed jail capacity (in-county and out of county), updated inmate population projections, and an evaluation of potential jail capacity solutions.

2007-2022

b. **Jail Expansion/Construction:** Based on the findings of the Jail Need Study discussed above, additional facilities may be warranted and should be constructed. This construction should occur as early as possible, given planning and financial constraints and growing prisoner populations.

MISCELLANEOUS FACILITIES

Solid Waste Disposal

The county's Solid Waste Management Division provides a variety of waste disposal services to county residents. These services include biweekly trash collection, leaf and yard waste pickup, bulky waste collection, hazardous waste and recycling drop-off facilities. The division also oversees the operation of transfer stations at two former landfill sites.

- *Trash Collection:* County household trash collection services are available to every county resident. Private trash collection companies also offer household trash collection throughout most of the county. County residents may also haul household trash, yard debris, and bulky waste to county transfer stations for disposal.

- *Other Waste Collection:* The county offers pick-up and disposal for bulky household waste (e.g. large appliances and furniture), and seasonal leaf collection (vacuum and bagged leaf collection) for non-rural areas. The county also operates a household hazardous waste drop-off and disposal program at the transfer stations. This program handles waste products such as engine fluids, household chemicals, pesticides, etc. The county contracts with private contractors for proper disposal or recycling of collected hazardous materials.

- *Solid Waste Disposal:* The county no longer operates active solid waste landfills, and there are no plans to site public landfills within the county. The county oversees four closed landfills to insure that they are properly managed in compliance with environmental regulations. Most county waste is processed at the Shoosmith sanitary landfill. Private waste haulers also use landfills located outside of the county.

- *Recycling:* County recycling facilities are provided in cooperation with the Central Virginia Waste Management Authority (CVWMA). A CVWMA curbside recycling collection program is currently available to all single-family homes in the county. The county also operates permanent recycling convenience centers (drop-off/transfer points for glass, newspaper, plastics, and metal) at the

Northern and Southern Area Transfer Stations, Watkins Elementary School, Woodlake Central Park, and Cloverleaf Mall. In addition, drop-off points for aluminum cans and newspapers are located at various county schools. The county currently exceeds the state-mandated 25 percent recycling rate, and achieves a recycling rate of approximately 38 percent. No additional permanent collection facilities are planned. Due to the success of the curbside recycling program, and subsequent reduced demand for drop-off recycling, the county is considering closure of some existing recycling centers.

County Airport

Chesterfield County Airport, located northwest of the intersection of Routes 288 and 10, is designated as a General Aviation Airport, providing facilities mainly for privately owned aircraft for business and personal use. It is also a designated reliever to Richmond International Airport. The designation and function of the airport are not projected to change over the planning period. The Chesterfield County Airport Master Plan Update 1993 - 2012 was completed in 1994. The full document and related graphics are available for review by contacting the County Airport (743-0771). The Master Plan recommends a variety of physical improvements to airport facilities, and removal of obstructions to instrument landing systems. The Master Plan forecasts future service demands and recommends facility improvements through the year 2012. An increase in annual aircraft operations of nearly 40 percent is projected by 2012. Due to crosswind patterns and the high level of usage by small craft, a second runway is recommended as a long-term improvement. Other Master Plan improvements include taxiways, lighting, hangars, storage, and parking.

Energy and Communications

Energy and communications services provided to county residents are essential to the development of the community. The need for these facilities accelerates with the development of land, while appropriate sites for their construction become scarce. Communications towers, various types of transmission lines, substations, and other such facilities should be compatible with the character of the community. Many of these facilities require county review through the substantial accord determination process. This process has been established to insure that public facilities are developed substantially in accord with the adopted Comprehensive Plan. The Federal Telecommunications Act of 1996 limits local authority over certain aspects of communications towers.

In addition, rapid market growth and changing telecommunications technology requires county review of these facilities to be flexible and adaptable. For this reason, the county has adopted guidelines for telecommunications facilities subject to the substantial accord review process. These guidelines, originally adopted by the Board of Supervisors and amended in 2002, are pending revision. The following policy standards are intended to provide general direction for the location and character of energy and communications facilities, with the intent that site-specific evaluations will be performed through the substantial accord process, using the telecommunications guidelines.

Locational Criteria

- Co-locate facilities whenever feasible. Use existing improvements for new equipment whenever possible.
- Locate facilities so as to minimize impacts on existing and future areas of development. Minimize locations adjacent to planned or existing residential development. Grouping facilities in industrial or remote areas is encouraged.
- Provide adequate acreage for expansion, including area to maintain adequate levels of screening to accommodate expansion.
- Sites with existing mature vegetation or topographical features which provide screening are preferred due to their natural ability to mitigate visual and noise impacts.

Other Criteria

- Transmission lines: Visual impact (public views) should be a key element in the evaluation of proposed facilities. Underground facilities are preferred wherever possible.
- Design facilities to minimize impacts on adjacent properties.
- Telecommunications facilities should be consistent with the adopted guidelines for telecommunications facilities subject to the substantial accord review process.

STORM WATER DRAINAGE

Introduction

This Plan element discusses existing plans and programs related to storm water drainage systems.

Existing Facilities

Storm water runoff is ultimately conveyed to adjacent/nearby waterways countywide. Key facility elements in this process include drainage ditches, swales, filters, retention areas (for long-term water holding, and detention facilities (for short-term water holding prior to ultimate release into nearby waterways). These ponds are referred to as "best management practice" (BMP) facilities.

Drainage facilities are most often built in conjunction with new development projects (subdivisions, commercial developments, etc.) as a developer responsibility. Retrofits and upgrades of existing system deficiencies (especially in older developed areas) occurs on an incremental, funds-available basis, through the Capital Improvements Program. The Environmental Engineering Department undertakes maintenance of the retention and detention ponds located in residential areas. The property owners maintain those facilities located in commercial areas.

Major drainage systems are typically developed to manage the quantity and quality of storm water runoff water in response to the Federal Clean Water Act, and requirements of the Chesapeake Bay Preservation Act.

Level of Service

The National Pollutant Discharge Elimination System (NPDES) Program, a component of the Clean Water Act (CWA), requires localities to ensure that pollutants entering their storm sewer systems are reduced to the "Maximum Extent Practicable." To achieve this goal, Federal CWA regulations require localities to develop and implement storm water management programs that include measures to provide:

- A comprehensive planning process that involves public participation and intergovernmental coordination
- A description of management practices, control techniques, and system design and engineering methods to reduce the discharge of pollutants to the storm sewer system to the Maximum Extent Practicable
- A description of resources and equipment available to implement the storm water management program
- Programs to control storm water runoff from commercial and residential areas, construction sites, and industrial facilities
- Identification and maintenance of structural control measures such as retention and detention ponds
- A program for the detection and removal of illicit discharges and to control and prevent improper disposal into the storm sewer system of any materials not composed entirely of storm water

Accordingly, the county Office of Water Quality has developed a comprehensive storm water management program that includes public education and outreach, BMP retrofit and maintenance, water quality monitoring, and enforcement of the following water quality ordinances: Chesapeake Bay Preservation Act, Illicit Discharge Ordinance, and the Erosion and Sediment Control Ordinance. In addition to the water quality ordinances, the Environmental Engineering Department also enforces the Floodplain Management Ordinance, which limits the amount of activities and development in floodplains.

Planned Facilities

System wide Improvements: From 2003 through 2008, the Office of Water Quality will be identifying segments of the storm sewer system that need to be retrofitted or improved in order to achieve the CWA requirements and the NPDES Permit. A prioritized listing of areas in the greatest need of improvement will be developed. The Environmental Engineering Department will also continue to identify components of the storm sewer system requiring improvement and/or enhancement.

Regional BMPs: Regional BMPs will be developed within the Swift Creek Reservoir watershed, under the Watershed Management Plan and Maintenance Program for the Swift Creek Reservoir Watershed. Regional BMPs are intended to insure that in-lake phosphorus concentrations do not exceed .05 milligrams per liter. Construction of these facilities will be fully funded by developers, and the county will

have responsibility for long-term facility maintenance. Maintenance costs will be partially offset by a new $100 per dwelling unit fee paid by new residential developers in the area.

TRANSPORTATION

Highlights

- There are approximately 1,631 miles of roads in Chesterfield County. Approximately 490 miles of these are "major" roads, not including 17 miles of interstate highways. There are 1,124 miles of local and subdivision streets.
- In 2000, 137 miles of major roads (28 percent) were operating at an unacceptable level of service ("E" or "F").
- By 2018, an estimated 164 miles of major roads (33 percent) will be operating at unacceptable levels of service, even assuming anticipated road improvements.
- There are 67 miles of unsafe secondary roads in the county – roads that have no shoulders, 20 feet or less pavement width, and carry more than 4,000 vehicles a day.

Existing Facilities

There are approximately 1,631 miles of roads in Chesterfield County, as follows:

Classification	Examples	Total Length
Interstate Highways	I-95 and I-295	17 miles
Primary Roads	Routes 10, 60, and 360	126 miles
Secondary Roads	Courthouse, Genito, Robious	364 miles
Local/Subdivision Roads	Various internal subdivision roads	1,124 miles

Most county roads are in the state highway system, and are maintained by the Virginia Department of Transportation (VDOT). However, there are approximately 15 miles of unimproved state maintained roads in the county. These roads are typically short segments without sufficient traffic to warrant state improvement. Approximately 72 miles of roads/rights-of-way in the county are not maintained by VDOT. These include private roads, unimproved rights-of-way, and a limited number of county roads.

Thoroughfare Plan

The Board of Supervisors adopted the Thoroughfare Plan in 1989. The Thoroughfare Plan shows right-of-way classifications of existing roads, and the right-of-way classifications and general alignments of proposed roads. It represents the road network that should be in place at the theoretical build-out horizon of the county. The Board of Supervisors must adopt any revisions to this plan. The Transportation Plan, in contrast, is an internal working document primarily used by the Transportation Department as a guide for evaluating development proposals. This document is not tied to a specific time horizon.

Level of Service

The county has no adopted policy mandating a minimum level of service for the transportation network. Such a policy would probably be unrealistic and unachievable, due to significant road improvement costs that would be needed to improve existing system deficiencies and limited funding options. The Transportation Department periodically calculates current levels of service of major county roads. "Level of service" (LOS) is a traffic congestion measurement, based on the amount of road traffic relative to road design capacity. LOS may range from "A" (smooth traffic flow with no congestion) to "F" (high traffic volumes with a significant level of congestion). For planning purposes, roads with LOS "E" or "F" are considered problematic and given higher priority for improvement planning. The mileage of major roads in the county operating at LOS "E" or "F" has been increasing over the past several years, even taking into account recent road improvements:

Year	Major Road Miles	Miles at LOS E or F	Percent
1986	462	85	18%
1996	489	129	26%
2000	490	137	28%
2018 (projected)	490	164	33%

Future Road Improvement Needs

The Transportation Department utilizes a traffic model to anticipate future road needs. The most recent model run projected traffic volumes for the year 2018, based on anticipated growth and development in the county and the region. Based on these projections, approximately 240 of the 490 miles of major roads in the county will be operating at LOS "E" or "F" by the year 2018. The following road improvements would be needed to improve roads operating at service levels "E" and "F" through the year 2018:

Widen roads to 8-lanes	14 miles
Widen roads to 6-lanes	57 miles
Widen roads to 4-lanes	23 miles
Improve 2-lane roads	138 miles
Shoulder improvements on 2-lane roads	8 miles
Total Needed Road Improvements	**240 miles**

Taking into account road improvements anticipated to be completed over this time frame, the Transportation Department estimates that there will still be approximately 164 miles of LOS "E" and "F" roads by the year 2018. This estimate is based on the working transportation model and average annual road improvement trends.

Road Development Process

County road improvements are provided by three different ways: in conjunction with development, by direct county action, and by state action.

- ***In Conjunction With Development:*** Improvements realized in conjunction with development projects may include construction of Thoroughfare Plan roads, turn lanes at access locations, and traffic signals. These improvements may be accepted through the zoning process, in the form of proffers or conditions of approval, or as a part of development review (such as plan review of a new shopping center). In general, road improvements associated with a specific development project cover internal road networks (private drives and interior subdivision roads) and a portion of area wide road improvements needed to offset development impacts.

- ***By Direct County Action*:** Improvements in this category typically include county paving projects of unimproved roads, and road shoulder improvement projects. These projects are usually small in scope and funded by the CIP budget and/or grant funding sources. The county has also directly funded a few major road improvements by issuing bonds.

- ***By State Action**:* Improvements to interstate, primary, and secondary roads are planned through the VDOT Six-Year Program (SYP). This program is reviewed and adopted annually by the Virginia Commonwealth Transportation Board. The SYP is developed with significant emphasis on regional road networks, and incorporates cooperative projects adopted in the Long Range Transportation Plans of the Richmond Area and Tri-Cities Metropolitan Planning Organizations. Funding for these major projects is mostly from State and federal sources. Project delivery is therefore subject to factors outside of county control, such as budgets or project delivery capabilities of other agencies.

- ***Recent Projects:*** Several major road projects have been completed in the past several years that have helped mitigate increased traffic volumes resulting from growth in the county and surrounding areas. Examples of recent major road projects include:

  - Route 288 completed as a 4-lane highway from I-95 to the Powhite Parkway
  - Route 10 widened to 4-lanes from Chester to the Chippenham Parkway
  - Route 360 widened to 6-lanes between Route 288 and Chippenham Parkway

  The Transportation Department has administered a few county road projects to facilitate and expedite their completion. This function has been traditionally performed by VDOT.

Sidewalks

The county's approach to construction and maintenance of sidewalks has changed over the years. The county has primarily developed as a rural suburb of the Richmond Metro area. Since the county was less densely developed than urban areas, and cars have been the primary transportation mode, sidewalks were not routinely constructed. For this reason, most existing developed areas do not have sidewalks. In the late 1980's, county staff could require sidewalks where warranted in business as well as residential areas.

However, with continued growth the county has seen the need for sidewalks in certain circumstances and has developed a Sidewalk Policy. Since the late 1990's, the Policy has been applied when reviewing residential development proposals. The Policy requires construction of sidewalks along through roads in new subdivisions, within a certain distance of commercial areas or public facilities. The Policy is consistent with VDOT requirements for sidewalks that can be maintained by the state. New sidewalks funded by the private sector are generally possible only in connection with new development subject to Policy requirements. The county has also been able to construct sidewalks in a few existing neighborhoods by utilizing the Federal Highway Administration/VDOT Enhancement Program. The funds for this statewide program are competitive and very limited.

Bikeway Plan

The Board of Supervisors adopted the County Bikeway Plan in 1989. The Bikeway Plan is a component part of the Comprehensive Plan, and identifies routes where bikeway facilities should be provided. This plan has been used in considering development proposals and in designing public road improvement projects. More information on the Bikeway Plan may be obtained from the Transportation Department.

WATER AND WASTEWATER UTILITIES

Introduction

The county Water and Wastewater Facilities Plan was adopted in 1999, and addresses countywide water and wastewater system maintenance and expansion through the year 2025. As with other elements of the Public Facilities Plan, this planning effort incorporated projected population growth and the county's land use plans in evaluating future needs. Water and wastewater system improvements are suggested, along with an implementation and capital cost plan. While the Water and Wastewater Facilities Plan is based on substantial growth in the existing service area, it promotes orderly growth and efficient system expansion by avoiding the extension of water and sewer pipelines through undeveloped areas to remote new development. The Water and Wastewater Facilities Plan specifies improvements designed to increase the quality and reliability of the existing system as well as growth driven improvements which are set forth in five-year increments.

Water System Improvements

The Swift Creek Reservoir and the Appomattox River Water Authority (ARWA) have served as the county's water supply in past years. An increasing amount of water will be obtained from the City of Richmond through a purchase agreement. The county's current water supply is 64.5 million gallons per day (mgd). Additional treatment capacity should be available from ARWA as future demands require. Recommended system expansion over the planning period includes new pumping stations, storage tanks, water mains, and pressure zone/service area improvements.

Wastewater System Improvements

Wastewater treatment is currently provided primarily by two county treatment plants, Falling Creek and Proctors Creek. Richmond and Petersburg city treatment plants service about ten percent of the county's wastewater volume. The current combined capacity of the Falling Creek and Proctors Creek facilities is 37.1 mgd.

The next expansion of the Proctors Creek treatment plant will extend system capacity to 50 mgd, and make discharge quality improvements. Effluent quality is currently well within permit discharge limits at both plants. Recommended system expansion over the planning period includes new and expanded pumping stations, and conveyance system expansions. For more information, contact the Utilities Department, at 751-1291.